

# LONGMONT ASTRONOMICAL SOCIETY

NOVEMBER 2020



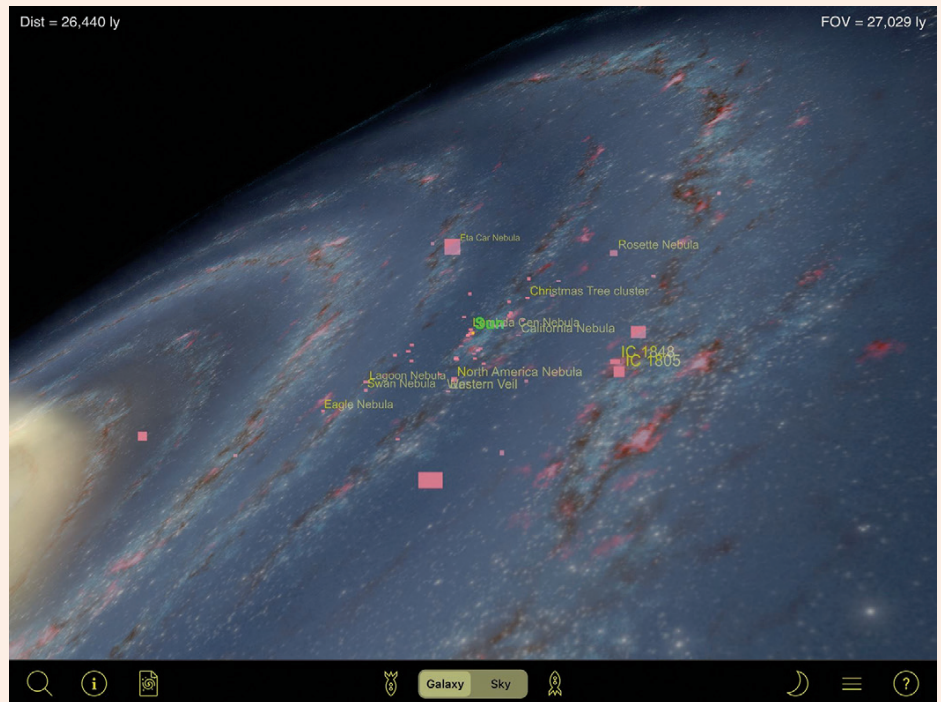
IC 1396 BY STEPHEN GARRETSON

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# LAS Virtual Meeting November 19 from 7 to 9 pm

## “Our Galaxy” by Bill Tschumy

Amateur astronomers generally know where to find deep sky objects in the night sky, but few are aware of their physical locations within the Galaxy. Our Galaxy is a new app for iOS and macOS (and soon for Windows and Android) that helps you understand the structural components of the Galaxy and visualize the locations and physical properties of deep sky objects in and around it. Bill will discuss the creation of Our Galaxy and use the app to illustrate what we know about galactic structure and show where some well known deep sky objects are located within and around it.



### Speaker Bio:

Bill Tschumy founded Otherwise Software in 1992 to develop innovative software.

Besides programming, Bill's other interest is amateur astronomy and astronomy education. In 2009 he got the chance to combine his programming skills with his love of astronomy and co-authored SkySafari, one of the most popular astronomy apps for mobile devices and Macintosh.

Bill has since left the SkySafari project and is now obsessed with understanding where the deep sky objects we observe are actually located in the Galaxy. The Our Galaxy app is the latest result of his efforts.

by **Stephen Garretson, LAS Vice President**

## 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>. The Longmont Astronomical Society is a 501 c(3), non-profit corporation which was established in 1987. Our main goal is to promote local amateur astronomy. This is accomplished through regular monthly meetings, star parties and public observing sessions. Regular meetings are held every month (except December) on the third Thursday.

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



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.



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### **LAS Officers and Board Members in 2020**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>• Bill Tschumy, President</li> <li>• Stephen Garretson, Vice President</li> <li>• Michelle Blom, Secretary</li> <li>• Bruce Lamoreaux, Treasurer</li> </ul> | <p>Board Members:</p> <ul style="list-style-type: none"> <li>Mike Hotka, Gary Garzone,</li> <li>Brian Kimball, Vern Raben</li> </ul> |
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## Solar System Highlights for November 2020



Image Credit: Brian Kimball

Third Quarter: Nov. 8 at 6:47 pm

New Moon: Nov. 14 at 10:08 pm

First Quarter: Nov. 21 at 9:46 pm

Full Moon: Nov. 30 at 2:31 am

### Mercury

Mercury is visible in the morning sky in constellation Virgo. On Nov 2 it is +0.6 magnitude in brightness and 8.4 arc sec across. On Nov. 20 it is -0.7 in brightness and 5.4 arc sec across.

### Venus

Venus is also in Virgo and is magnitude -4 in brightness and 13 arc sec across.

### Mars

Mars is visible high in the evening sky in constellation Pisces. On the 1st it is magnitude -2.1 in brightness and 20 arc sec across. On the 30th it is -1.1 in brightness and 15 arc sec across.



Image Credit: Gary Garzone

### Jupiter

Jupiter is visible in the western evening sky in constellation Sagittarius and is around 35 arc sec across and -2.1 in brightness this month.



Image Credit: Gary Garzone

### Saturn

Saturn is also in constellation Sagittarius and is about 16 arc sec across and magnitude +0.6 in brightness.



Image Credit: Gary Garzone

### Uranus

Uranus may be seen in the evening sky in constellation Aries. It is magnitude +5.7 in brightness and its disk is 3.7 arc sec across. It was at opposition on Oct. 31st.

### Neptune

Neptune is visible in the evening sky in constellation Aquarius. It is magnitude 7.8 in brightness and the disk is 2.3 arc sec across. Neptune was at opposition on Sept. 11th.

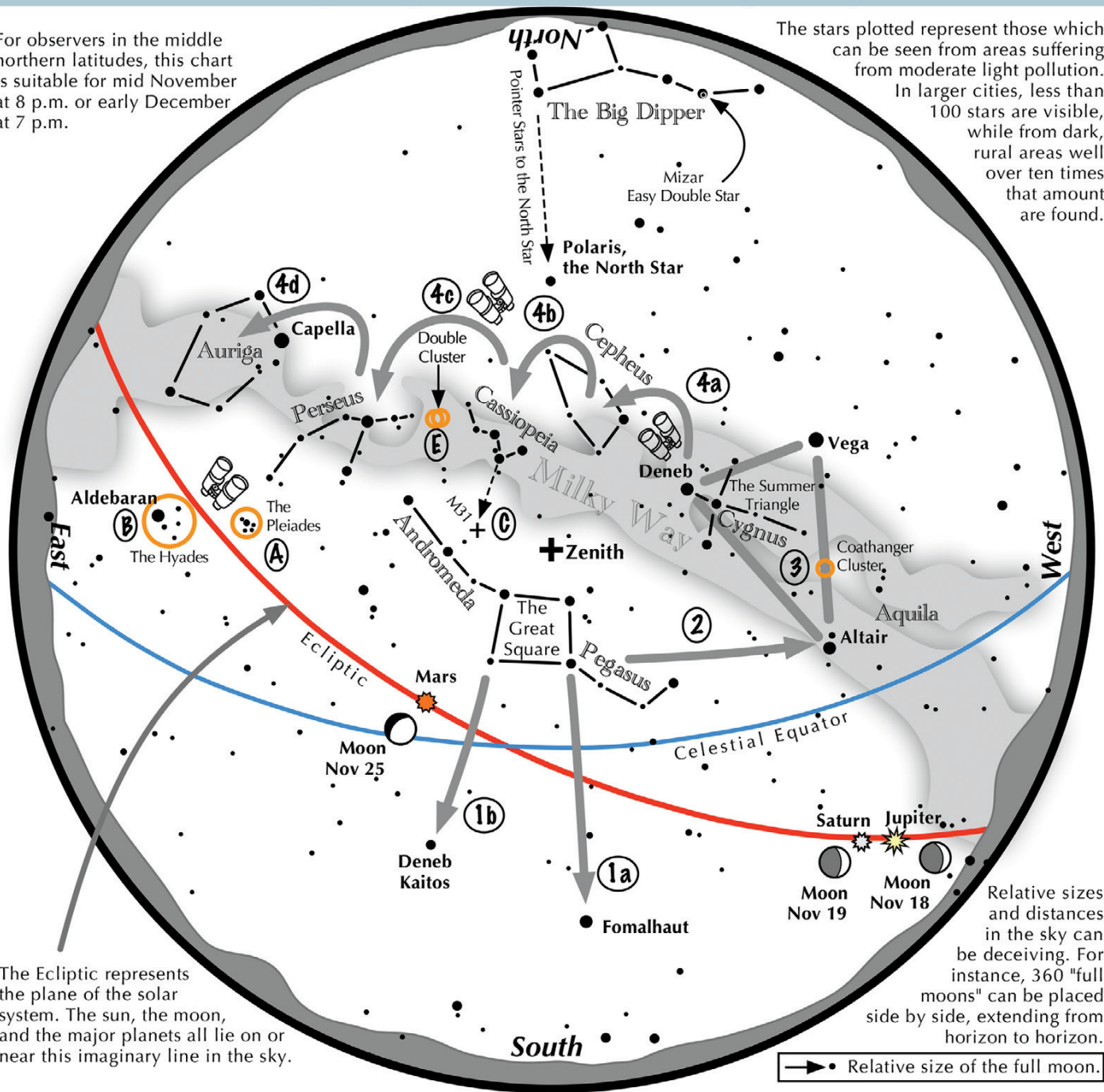
### Meteor Showers

The Leonids meteor shower peaks on the night of Nov 16-17. Radiant is in constellation Leo at RA=10h12m Dec=+22°00'. Leonids are caused by debris from Comet Tempel-Tuttle hitting Earth's atmosphere. Expect to see about 15 per hour from a dark location.

# Navigating the mid November Night Sky by John Goss

For observers in the middle northern latitudes, this chart is suitable for mid November at 8 p.m. or early December at 7 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.



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 November night sky: Simply start with what you know or with what you can easily find.

- 1 Face south. Almost overhead lies the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend a line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the south. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second brightest star in the south.
- 2 Draw a line westward following the southern edge of the Square until it strikes Altair, part of the "Summer Triangle."
- 3 Locate Vega and Deneb, the other two stars of the Summer Triangle. Vega is its brightest member, while Deneb sits in the middle of the Milky Way.
- 4 Jump along the Milky Way from Deneb to Cepheus, which resembles the outline of a house. Continue jumping to the "W" of Cassiopeia, then to Perseus, and finally to Auriga with its bright star Capella.

### Binocular Highlights

**A and B:** Examine the stars of the Pleiades and Hyades, two naked eye star clusters. **C:** The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval. **D:** Sweep along the Milky Way from Altair, past Deneb, through Cepheus, Cassiopeia and Perseus, then to Auriga for many intriguing star clusters and nebulous areas. **E:** The Double Cluster.

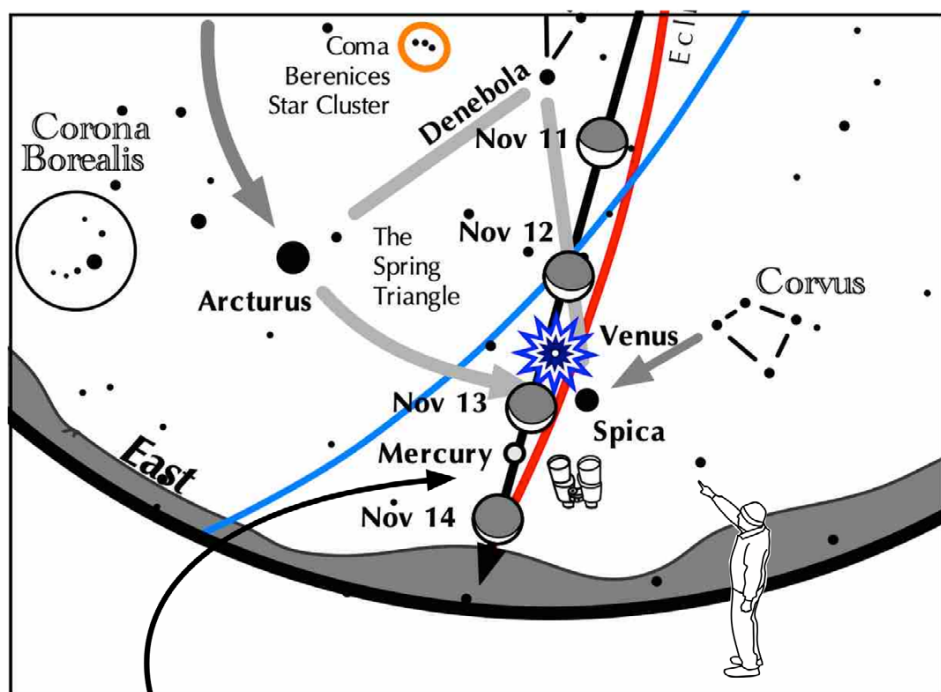


Astronomical League [www.astroleague.org/outreach](http://www.astroleague.org/outreach); duplication is allowed and encouraged for all free distribution.

# If you can observe only one celestial event this month, see this one:

## Mercury, Venus, Spica, and the crescent Moon in the morning twilight

Have you ever spotted Mercury? Many stargazers have not. November 4 through November 22 presents a good opportunity to catch the elusive little planet in the morning sky.



- Look low into the east-southeastern twilight **forty minutes before sunrise.**

- Mercury will be placed 1 fist width above the horizon on Nov. 6 – 15. Directly to its right, twinkles Spica on Nov. 2–7.

- Bright Venus is about twice the distance from the horizon as the dimmer Mercury.

- The waning crescent Moon glows just above Venus on November 12; and between Venus and Mercury on November 13. Spica lies just to the right of the Moon.

- Venus slides past Spica on November 17.



**Mercury**

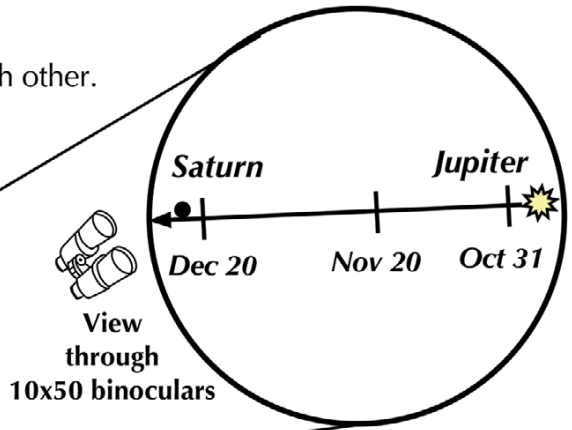
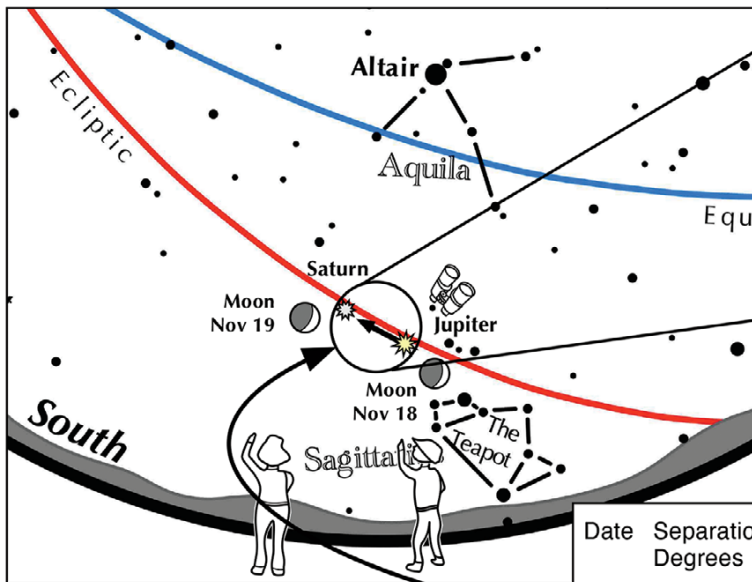
10°

East-Southeast

Mercury appears about "1 fist-width on a fully extended arm" above the true east-southeastern horizon forty minutes before sunrise.

# A rare event coming your way!

Once every 19 3/4 years, Jupiter and Saturn approach each other.  
This will be their closest in 397 years!



## Jupiter approaches Saturn

Look to the southwest 60 minutes after sunset throughout November and into December.

- Low in the southwest shine Jupiter and Saturn, the solar system's two largest planets.
- Over the next seven weeks, Jupiter inches eastward toward Saturn as they both sink towards the set sun.
- Hold up your index finger on your fully outstretched arm. Its angular width is about 2°.
- As the nights pass, how many "fingers" can be placed between the two planets? By Nov. 10, just 2, and by Nov. 30, only 1.
- On December 21, the planets appear to merge into a single bright object. Binoculars and a telescope will separate them at that time.

Southwest 60 minutes after sunset



Angular width of index finger on an outstretched arm = 2°  
(1 fist-width = 10°)



Date	Separation Degrees	Index Fingers
Oct 31	5° 11'	2.6
Nov 5	4° 44'	2.3
Nov 10	4° 17'	2.1
Nov 15	3° 47'	1.9
Nov 20	3° 23'	1.7
Nov 25	2° 47'	1.4
Nov 30	2° 16'	1.1
Dec 5	1° 44'	0.9
Dec 10	1° 12'	0.6
Dec 15	0° 39'	0.3
Dec 21	0° 06'	0.0

## Newsletter Archives

### 10 Years Ago - Nov. 2010



NGC211 by LAS member Brian Kimball  
Longmont Astronomical Society Newsletter  
November 2010

The speaker at the November 18, 2010 meeting will be Dr Jim Elkins with the National

Oceanic Administration in Boulder, CO. His presentation is titled "Understanding the Earth's Atmosphere Better with Unmanned Aircraft Systems".

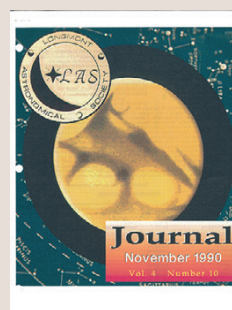
### 20 Years Ago - Nov. 2000



The recent Denver Sky Show turned into the Denver Cloud show. Gary Garzone gave a report detailing wonderful dark sky objects in

constellation Cygnus. Brian Kimball displayed custom wooden boxes produced by a local wood maker. Gary Emerson gave a slide show talk describing radical ways the CCD camera has simplified, speeded and widened the scope of ways that amateurs can contribute to astronomical research.

### 30 Years Ago - Nov. 1990

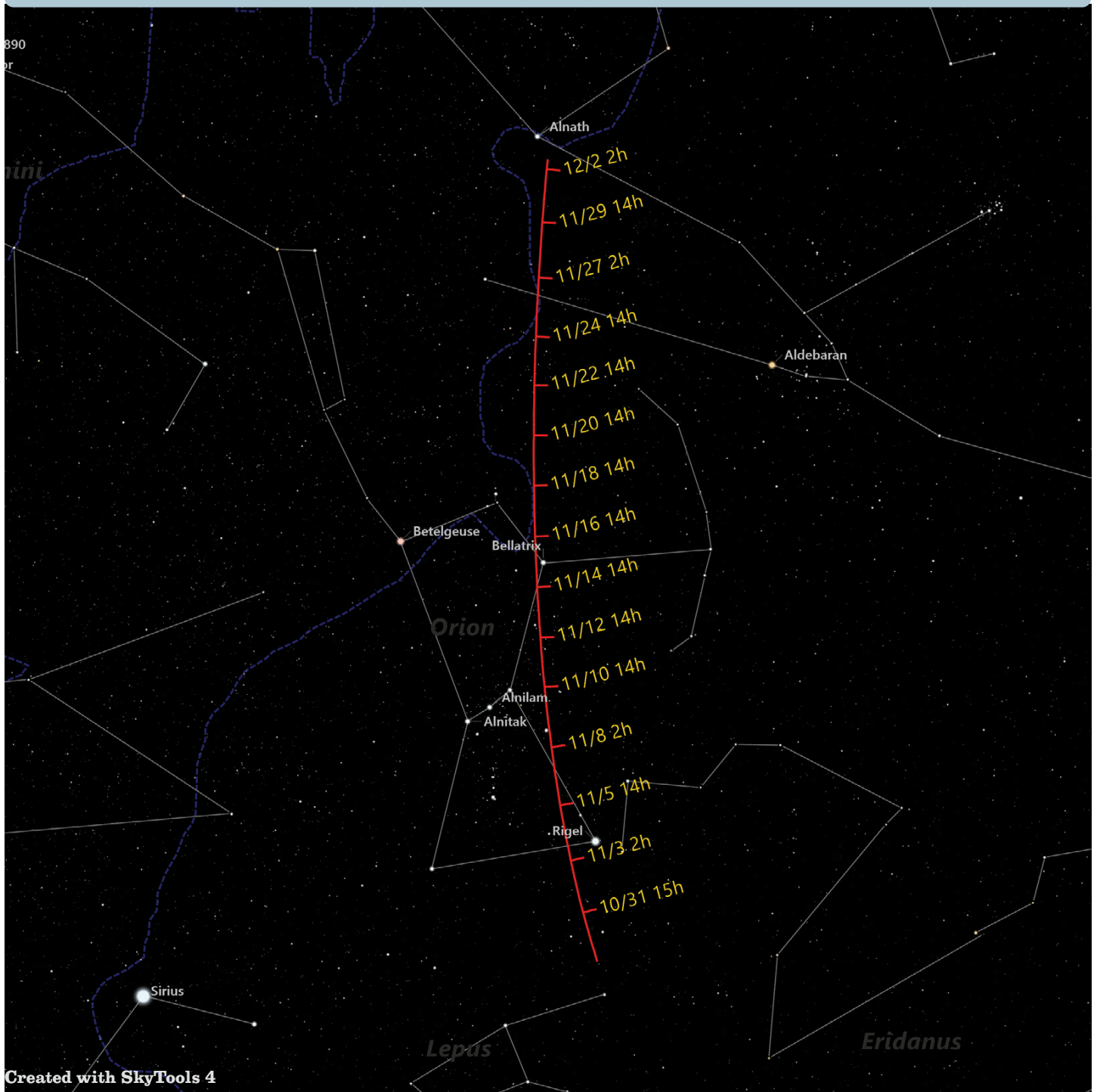


We had a great turnout of about a 100 people at the October public star party. We will do again this month and Mars will be

center stage; Mars opposition is in 3 days. There will not be a regular meeting next month as we will have our annual banquet. It will again be at the Gray's Cafe in the Budget Host Motel on Highway 119 near I25. Ray Martin, our friend and benefactor, from the Star Tracker will be our first ever guest speaker.

# Comets in November

## C/2020 M3 (ATLAS)

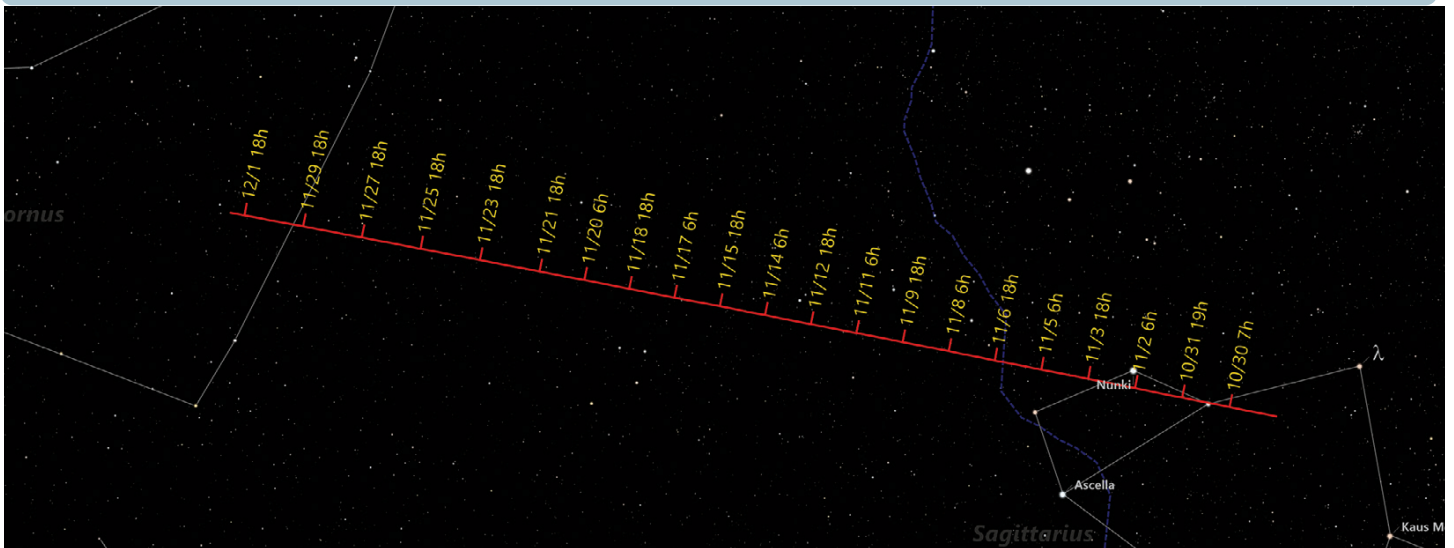


Created with SkyTools 4

Date	Optimal time	RA	Dec	Brightness	Size (arc min)	Constellation
Nov. 1	2:49 am	05h19m39.0s	-10°14'44"	7.6	6.1	Lepus
Nov. 8	2:08 am	05h25m06.7s	-02°00'16"	7.5	6.5	Orion
Nov. 15	1:46 am	05h27m51.4s	+07°04'54"	7.6	6.5	Orion
Nov. 22	1:17 am	05h28m05.9s	+16°15'16"	7.7	6.3	Taurus
Nov. 30	9:20 pm	05h26m03.2s	+25°37'50"	8.0	5.8	Taurus

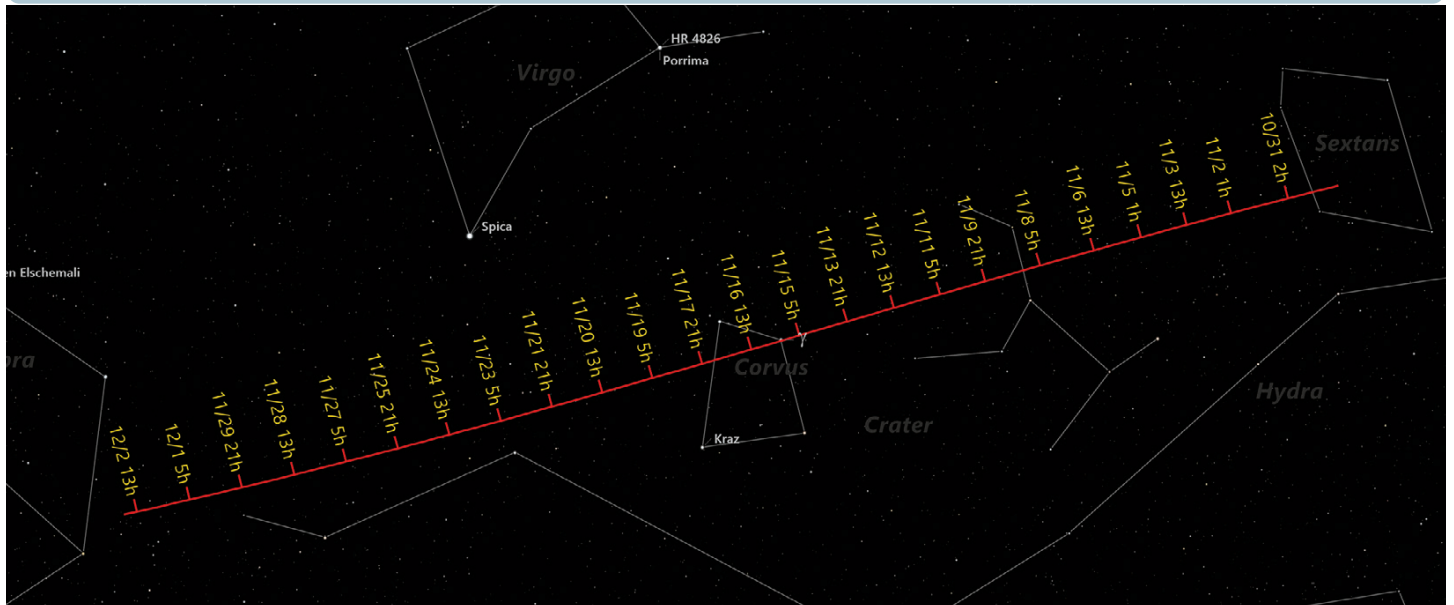


## 88P (Howell)



Date	Optimal time	RA	Dec	Brightness	Size (arc min)	Constellation
Nov. 1	6:17 pm	18h54m08.9s	-26°47'17"	8.5	7.5	Sagittarius
Nov. 8	6:12 pm	19h21m20.4s	-26°02'37"	8.8	7.3	Sagittarius
Nov. 15	6:09 pm	19h47m47.1s	-25°00'54"	9.0	7.0	Sagittarius
Nov. 22	6:06 pm	20h13m18.2s	-23°44'23"	9.2	6.8	Capricornus
Nov. 30	6:03 pm	20h41m10.6s	-22°02'00"	9.5	6.5	Capricornus

## C2020 S3 (Erasmus)

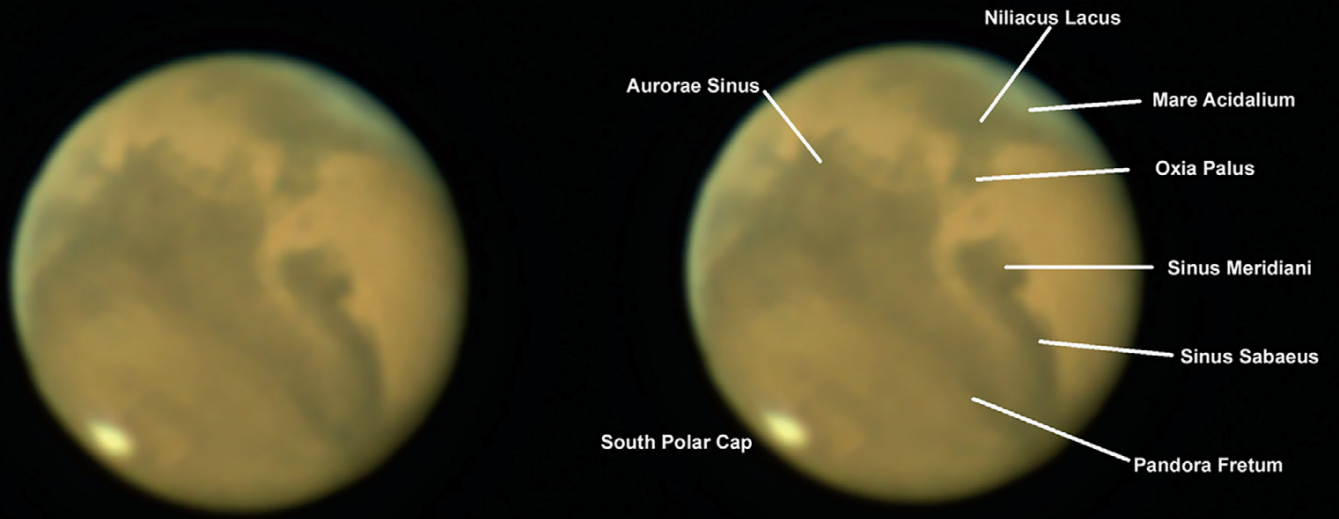


Date	Optimal time	RA	Dec	Brightness	Size (arc min)	Constellation
Nov. 1	5:07 am	10h38m50.8s	-09°03'10"	9.9	3.5	Sextans
Nov. 8	5:16 am	11h25m54.2s	-13°35'46"	9.3	3.8	Crater
Nov. 15	5:26 am	12h20m57.5s	-17°59'11"	8.6	3.9	Corvus
Nov. 22	5:38 am	13h22m48.6s	-21°29'00"	8.0	3.9	Virgo
Nov. 30	5:52 am	14h38m12.2s	-23°33'35"	7.3	3.6	Libra

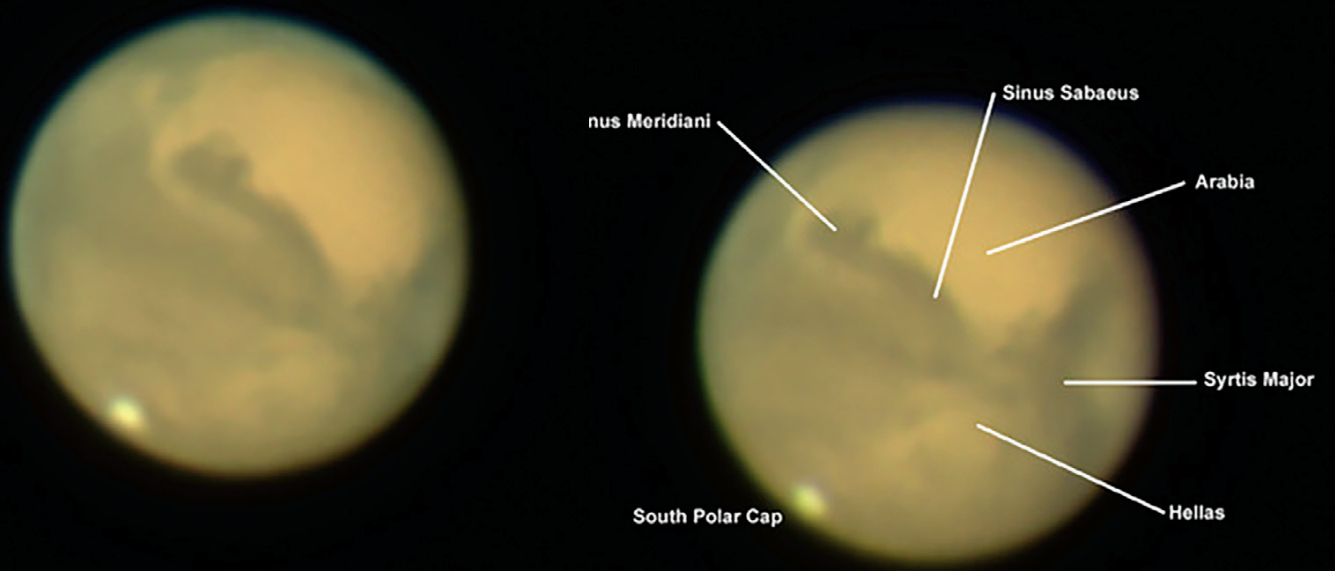
## Member Images from October 2020



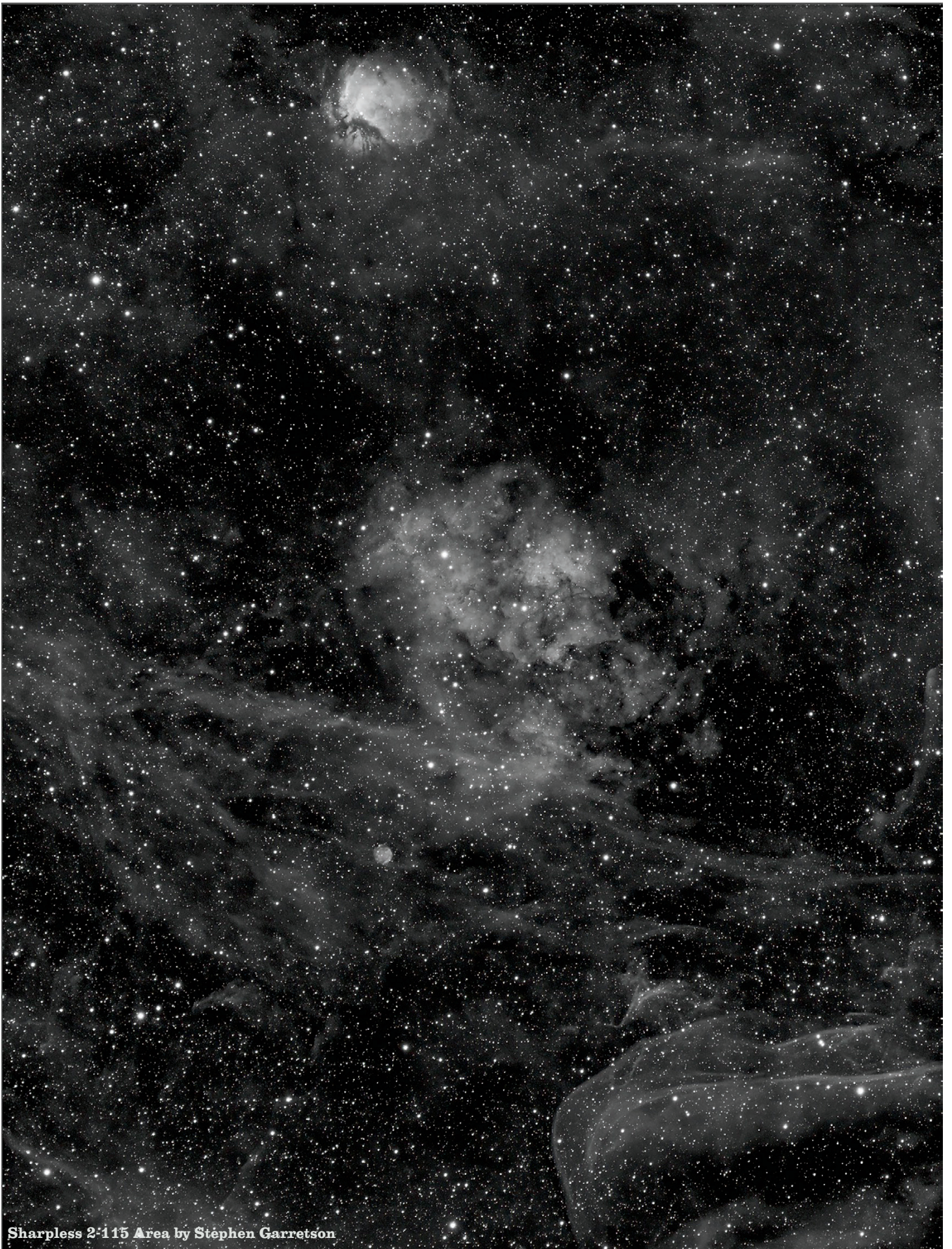
**Sharpless 2-108 by Tally O'Donnell**



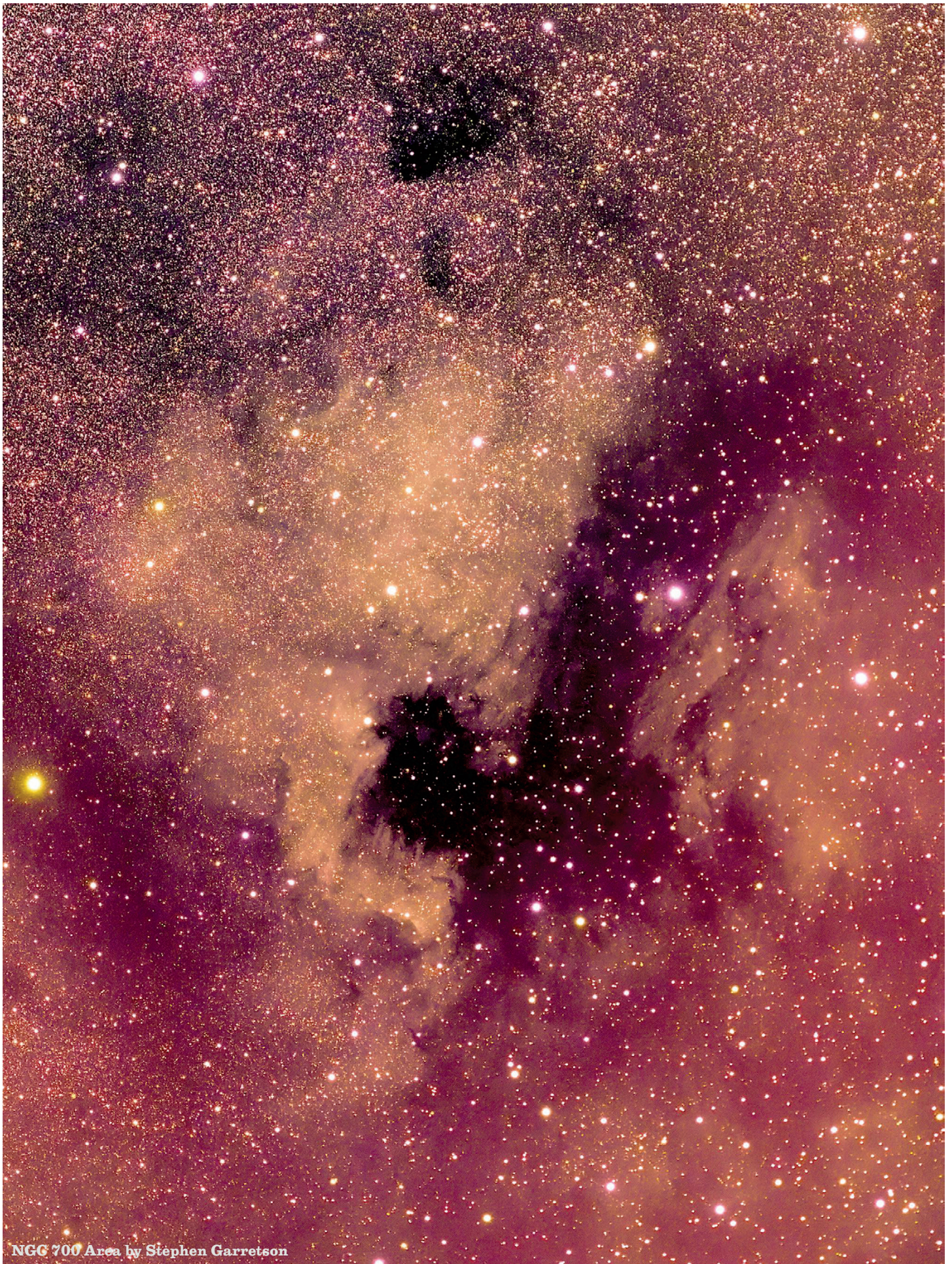
**Mars on Oct 4 by Vern Raben**



**Mars on Oct 8 by Vern Raben**



**Sharpless 2-115 Area by Stephen Garretson**



NGC 700 Area by Stephen Garretson



**Heart Nebula by Rolondo Garcia**



Night Time Fire Image by Rolonda Garcia



Fires in Colorado by Eddie Hunnell



**M42 by Jim Pollock**

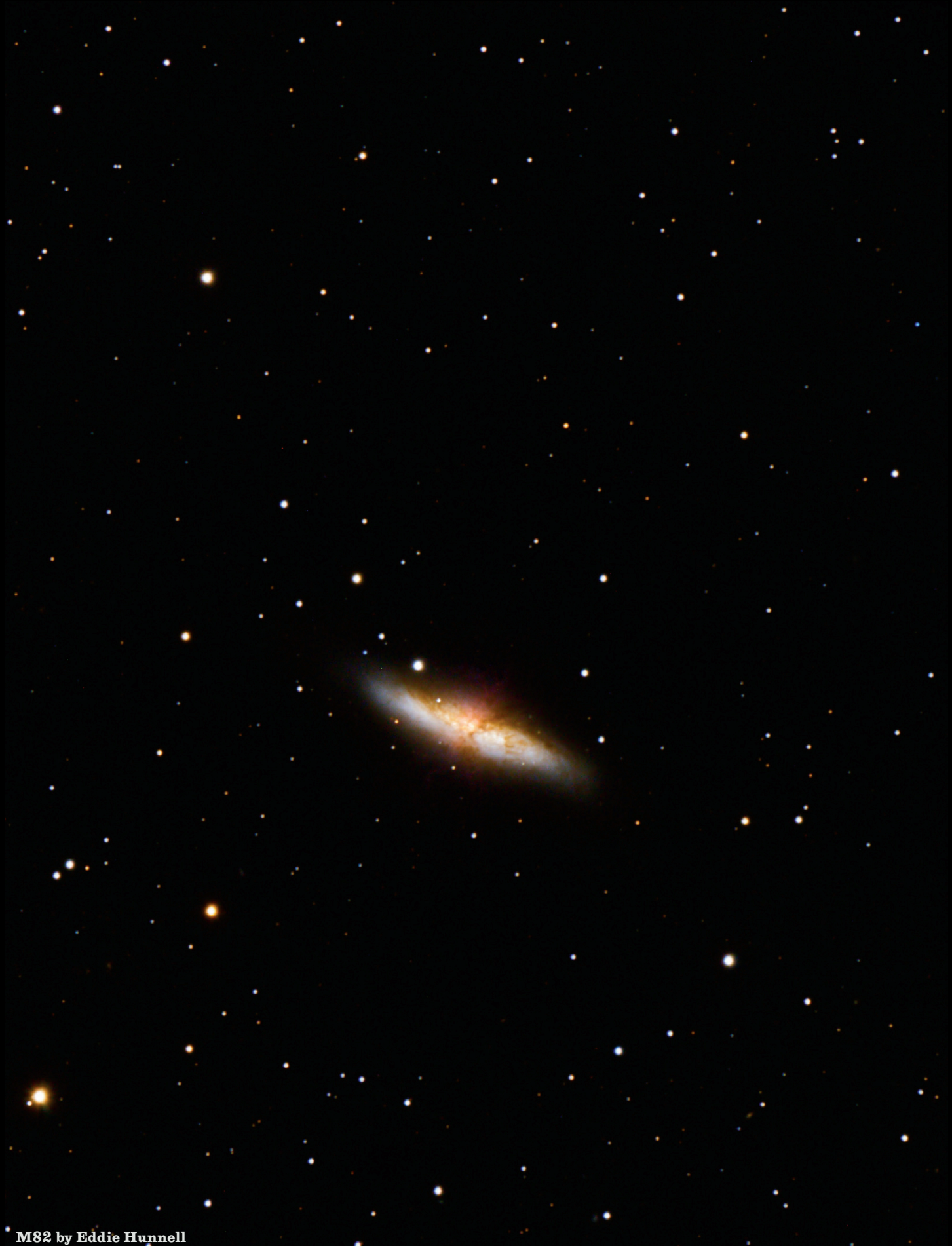


**Mars by Gary Garzone**



**Saturn by Gary Garzone**







**M1 Crab Nebula by Eddie Hunnell**

**IC 1706 Fish Head Nebula by Eddie Hunnell**



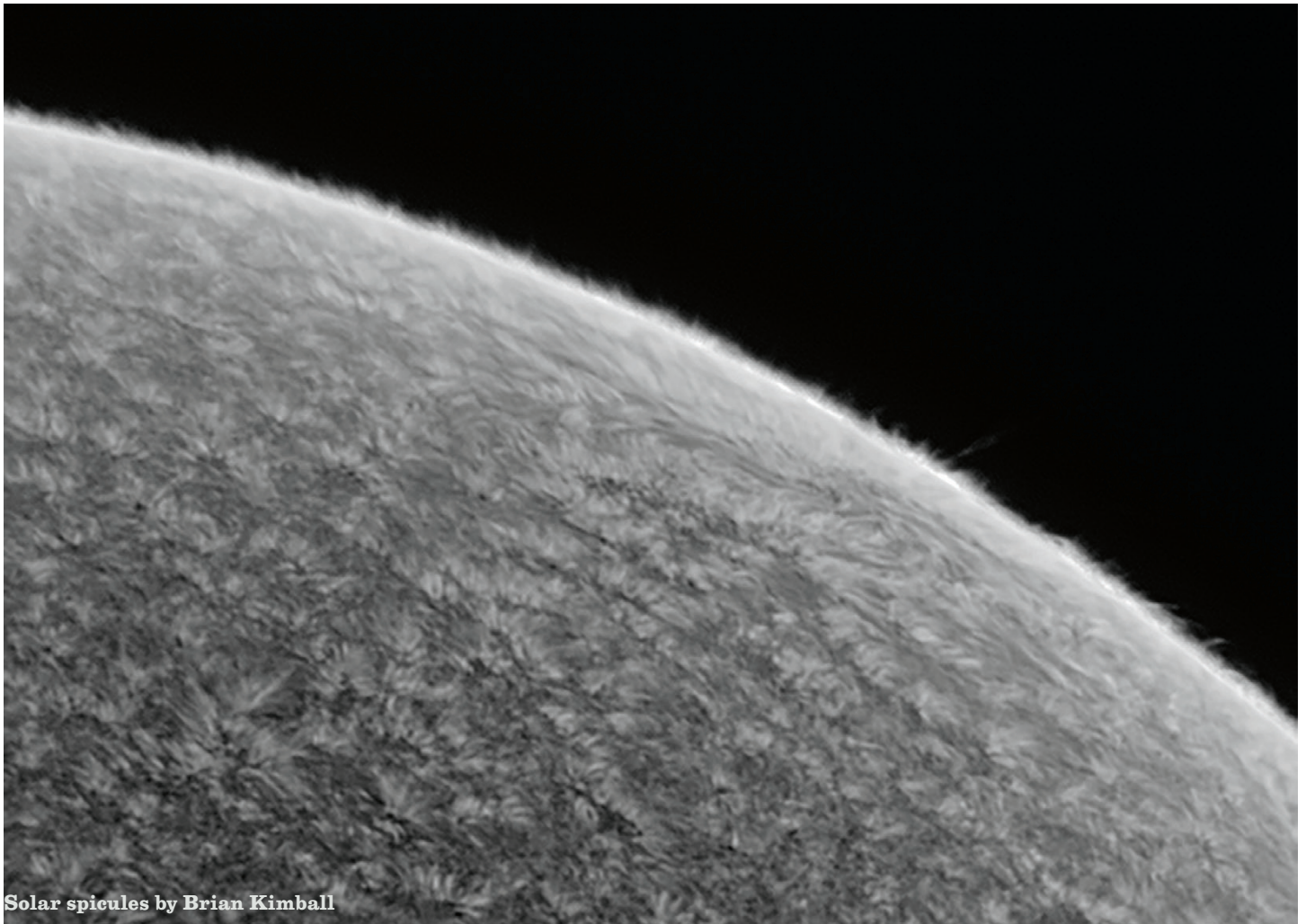
Travel Scope by Eddie Hunnell



Cygnus Clouds by David Elmore



Sharpless 2-155 by David Elmore



**Solar spicules by Brian Kimball**



**Saturn by Brian Kimball**

# Summary of Oct. 15, 2020 Meeting

Bill Tschumy, LAS President, opened the meeting at 7 pm. He introduced the speaker, Tom Field. Tom Field has been a contributing editor at Sky and Telescope Magazine. He developed R-Spec software which may be used to analyze spectra taken by simple gratings such as the Star Analyser 100.

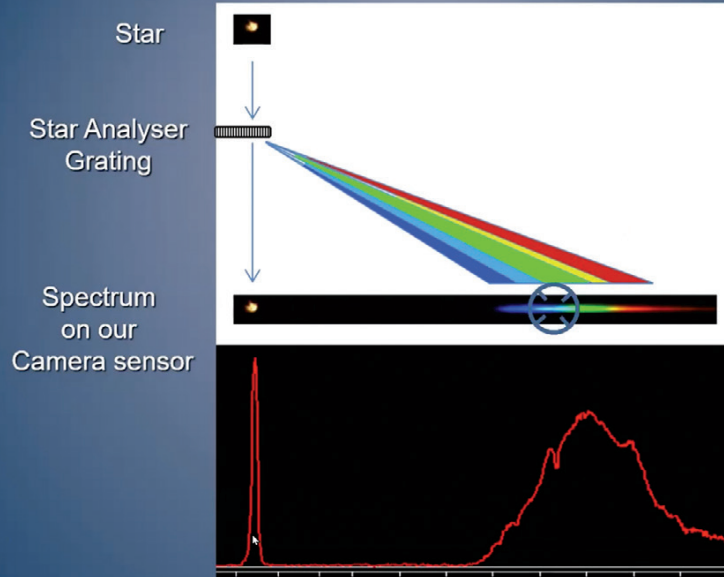
Have you wondered how we have managed to learn so much about the universe? We get fleeting glimpses looking through telescope in two or three dimension. There are hints of changes that occur over time (a 4th dimension).

Sir Isaac Newton used a prism to separate light into its components; later it was found that tiny, closely wound wires (gratings) could produce these spectra as well. Robert Bunsen discovered that different elements have different spectra. The gaps or lines were unique to each element. Bunsen and Kirchoff could see that there were two types of lines, emission and adsorption. The number of elements that could be identified by their spectra was extended by several other scientists. It was found that the spectra of various elements such as hydrogen could be seen in light from the sun and stars. This meant that the spectral data from stars and other objects could tell us a lot about the object such what gases it was composed of, how hot it was, and even how far away.

You might want to capture spectra:

- If you remember the thrill of taking your 1st photo of the moon (doing something new)
- You want to do some new science with your equipment or wish to recreate some historical discoveries
- You want to try a new activity but

From raw photons ... to qualitative data:



don't want to risk making a large equipment investment

- When you own the data you are motivated to learn more and actually remember something about it

Another great thing about spectroscopy is that it is more immune to light pollution.

To get started you need

- grating (star analyzer)
- camera
- adapter and spacer
- data reduction software (such as the one Tom Field sells, R-Spec)



In 2009 Tom became interested in spectroscopy and obtained a grating. He used duct tape to attach a webcam to his telescope and was able to cap-

ture a spectra of the bright star Vega. He then tried software then available to analyze it and found it difficult and frustrating to use. He decided to write his own software. He wanted the interface to be simple as possible and easy to use. To use it you simply frame the spectra of the star and then adjust the frame area. Yoy then show a built in catalog of various elements to calibrate it.

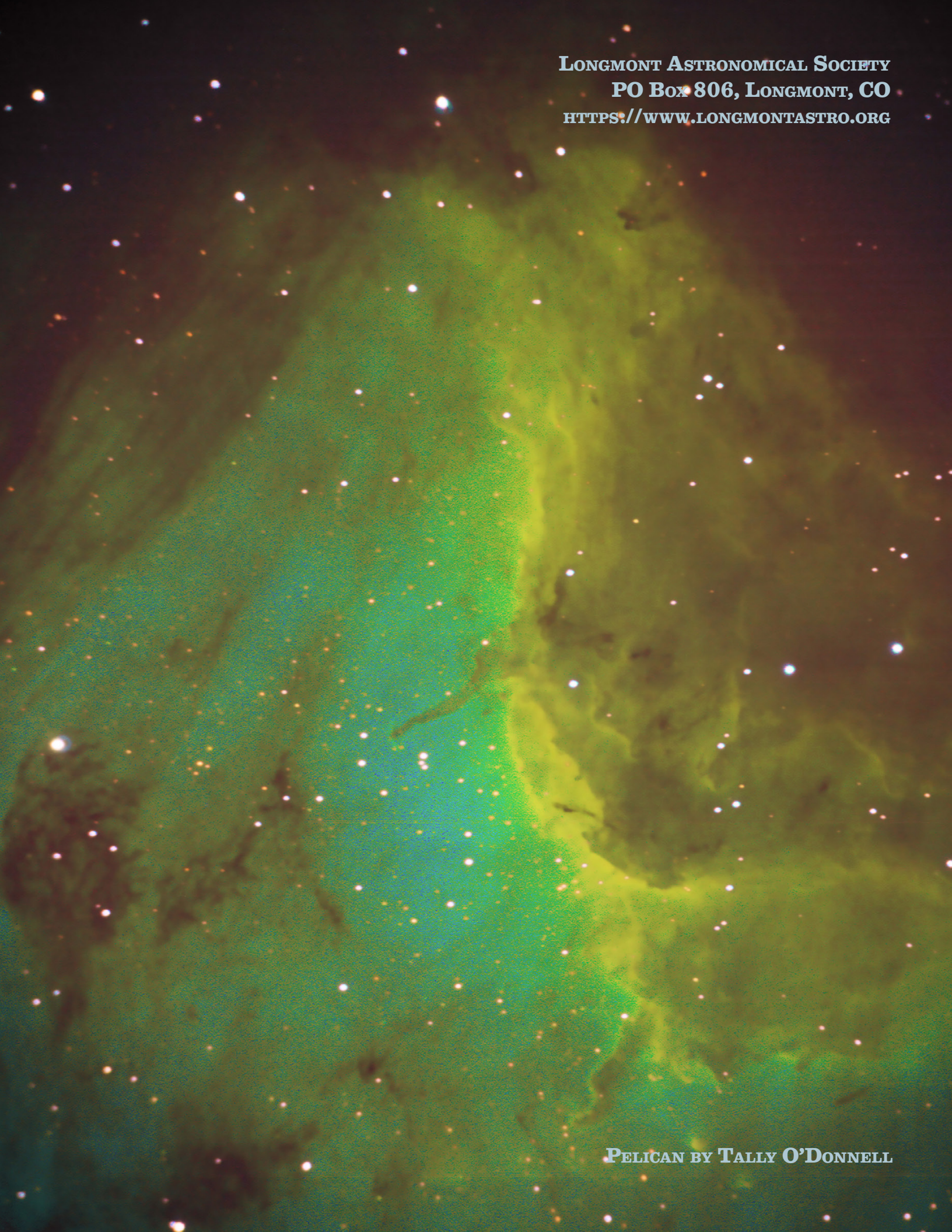
## Business Meeting

Current Events:

- Mars opposition members getting some great images
- NASA Osiris-Rex samples material from asteroid on Oct. 20th
- Orionids meteor shower peaks on 21st
- Comets P1 Neowise is coming, it should reach mag 8; Its low in eastern sky during twilight.

Officer Reports

Treasure (Bruce Lamareaux) reports the Astronomical League dues have been paid; otherwise little change. We have a total of 83 members (81 regular and 2 students).

The image shows a large, irregularly shaped nebula, the Pelican, glowing in shades of green and blue. The nebula has a complex, filamentary structure with many bright spots and darker regions. It is set against a dark background filled with numerous stars of varying brightness. The overall appearance is that of a vast, glowing cloud of gas and dust in space.

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

**PELICAN BY TALLY O'DONNELL**