

Longmont Astronomical Society

July 2019

Messier 8 by David Elmore

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Notes from the President: Bill Tschumy

I just returned from 4 great days and nights at the Rocky Mountain Star Stare (RMSS). This event is put on every June by the Colorado Springs Astronomical Society. They do a fantastic job and it just gets better each year. It is held on 35 acres of land they own near Gardner, CO (west of Walsenberg) at 7600 ft elevation. I heard they had around 330 people pre-registered this year.

The weather forecast for this star party wasn't great but I went anyway. It ended up being clear every night and the skies were magnificent. There is a lesson to be learned here. Forecasts (especially for clouds) are notoriously bad. Unless the forecast is for 100% clouds and rain, it is often worth giving it a chance. The last two days were predicting clouds for the both nights, but it cleared off anyway. So now I'm happy but exhausted from 4 straight nights of excellent observing.

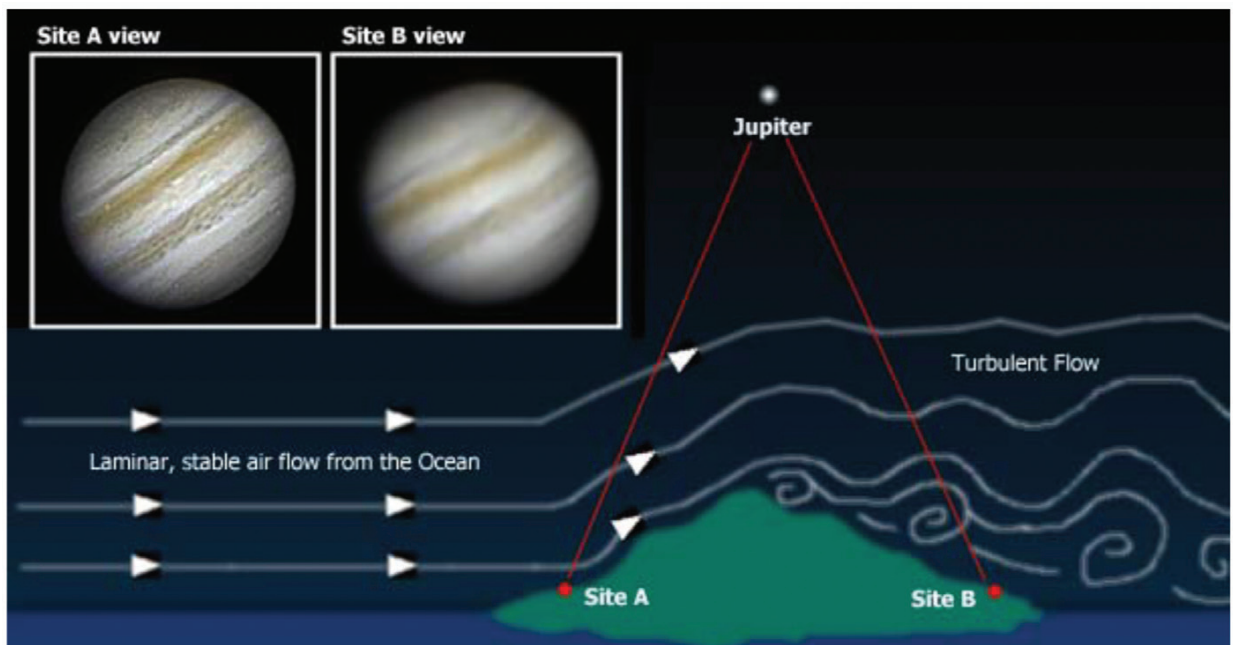
Two other club members were there with me. Our usual site was already taken so we set up in the relatively unused southwest field. It was a nice choice – private and quiet. There may have been other members there that I did not see. If so, sorry we missed you.

I encourage all of you to try to attend RMSS next year. If you have never been to a large regional star party, you could also try the Okie-Tex Star Party which happens in the early Fall (Sept 21-29th this year). It is another well done event under dark skies.

Next Meeting July 18 “Seeing, Transparency, and Light in the Night Sky”

Twinkle, twinkle, little star... Let's face it, astronomers are at odds with poets and songwriters on this one. The quaint and often lovingly mentioned twinkling of stars in the night sky is very unhelpful in astronomy,

whether you are star-hopping to find that elusive binary or trying to image a bright nebula. Earth's atmosphere is a complex mix of interacting fluid forces, responding constantly to a collection of forces from incoming solar radiation to



features in the **Credit: Steve Albers**

landscape. Whatever the causes, the result is turbulence. And whether reflected from the surface of a planet or directly from stars, light passing through our turbulent atmosphere bounces around.

Our July speaker is LAS member Steve Albers. Steve has studied atmospheric turbulence extensively, including work at NOAA and now with SPIRE Global. Steve will help us understand the ins and out of these phenomena. Note: as of today (July 5) the location of the meeting is unknown and will be announced shortly?

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About LAS

The Longmont Astronomical Society Newsletter ISSN 2641-8886 (web) - ISSN 2641-8908 (print) is published monthly by the Longmont Astronomical Society, P. O. Box 806, Longmont, Colorado. Newsletter Editor is Vern Raben . 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. The current location is at the First Evangelical Lutheran Church, 3rd Avenue and Terry Street, Longmont, CO. Meetings are open to the public and begin at 7:00 PM.

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.



Solar System Highlights

Moon



Image credit: Brian Kimball

New Moon: July 2 at 1:16 pm

First quarter: July 8 at 4:56 am

Full moon: July 16 at 3:39 am

Third quarter: July 24 at 7:19 pm

New moon: July 31 at 9:13 pm

Mercury

Not visible with naked eye in bright evening twilight. Maybe try spotting it with binoculars 3 degrees (half of a binocular field) below the moon on July 5th?

Venus

Not visible. Conjunction with the Sun on Aug 14.

Mars

Not visible with naked eye in bright evening twilight. Maybe try spotting it with binoculars just below limb of the moon on July 4th?

Jupiter



Image credit: Gary Garzone

Jupiter is in the constellation Ophiuchus. It is magnitude -2.6 in brightness. The disk decreases from 45 to 43 arc sec across this month.

Assuming a longitude of 212 degrees, the Great Red Spot will transit the center of Jupiter's disk at the following times:

Date	Time	Altitude
July 1	2:01 am	20°
July 1	9:52 pm	26°
July 3	11:30 pm	29°
July 5	1:09 am	23°
July 6	9:00 pm	23°
July 11	12:16 am	26°
July 13	9:46 pm	28°
July 15	11:24 pm	28°
July 18	8:54 pm	27°
July 20	10:23 pm	29°
July 23	12:11 am	22°
July 25	9:40 pm	29°
July 27	11:19 pm	25°
July 30	8:49 pm	29°
August 1	10:27 pm	27°

Saturn

Saturn is in constellation Sagittarius this month. It is +0.1 magnitude in brightness and its disk is 18 arc sec across. Saturn is at opposition with Earth on July 9 around 11 am MDT.

Uranus

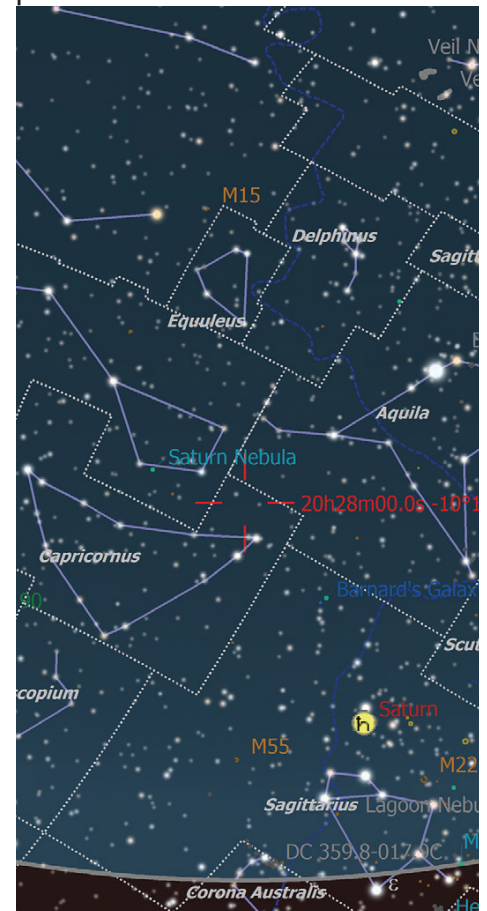
This month it is in constellation Aries; the disk appears to be 3.5 arc sec across and the planet is +5.8 magnitude in brightness.

Neptune

Neptune is in the constellation Aquarius. It brightens from +7.9 to +7.8 this month; the disk is 2.3 arc sec across.

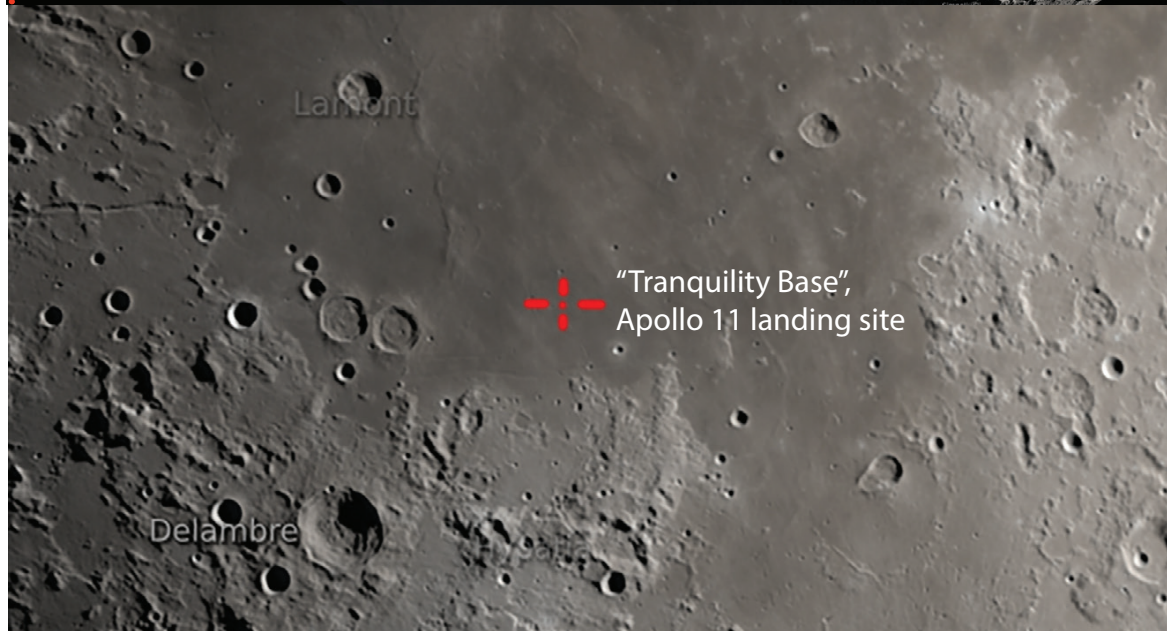
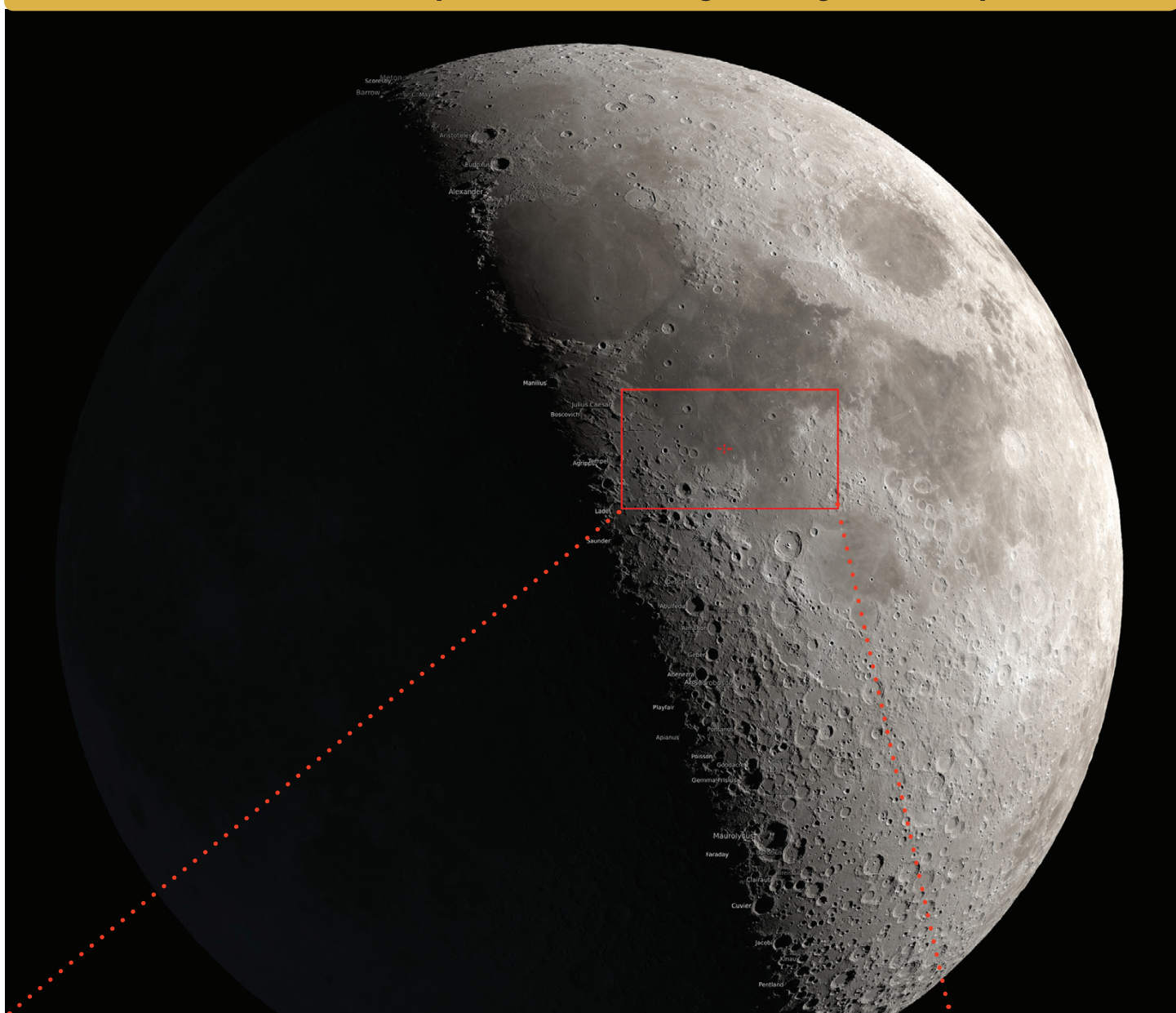
Meteor Showers

The Alpha Capricornids meteor shower is active from July 3 through August 15. The meteor shower peaks on night of July 29 and 30th. Usually about 5 an hour may be seen from a dark site. Radiant is at RA 20:28 and Decl. -10.2°. This meteor shower is notable for the number of bright fireballs it produces.



Credit: SkyTools 3

Location of the Apollo 11 Landing Site (June 8, 9pm)

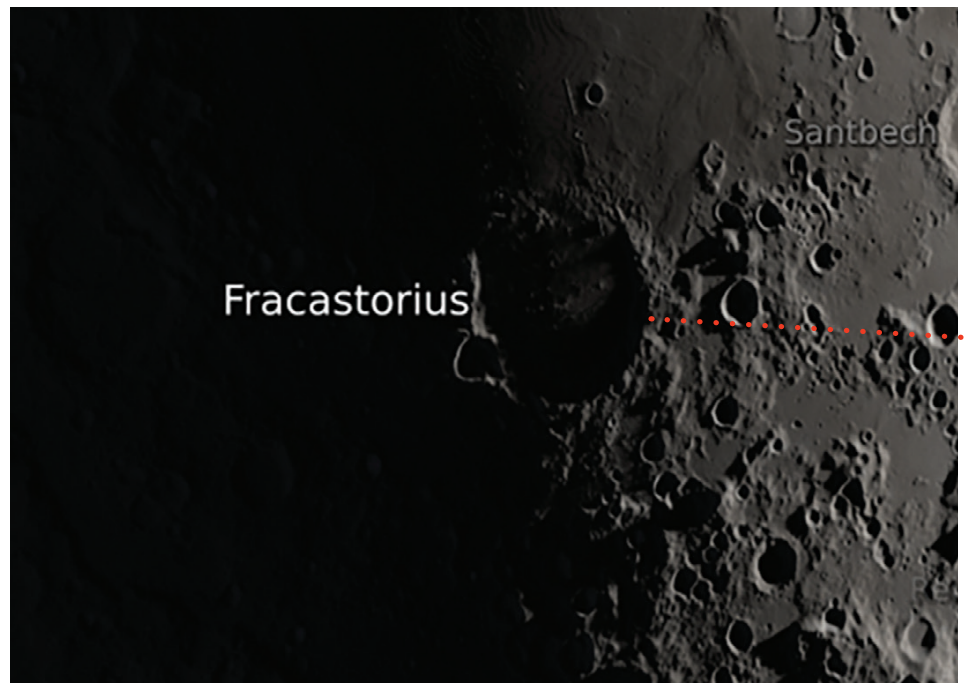


Lunar Highlights July 9

A pair of craters named Hercules and Atlas are very noticeable this evening in the north. These craters are a study in contrast. Hercules on the left is more recent; its rim is sharp and well defined. Atlas on the right appears worn and more damaged by impacts.



Fracastorius crater is quite prominent tonight; it is located in the southern part of Mare Nectaris. Sunrise is just reaching its most prominent satellite crater "D" on the southwest wall. The rim of the crater brightly lit but the floor is still in darkness.

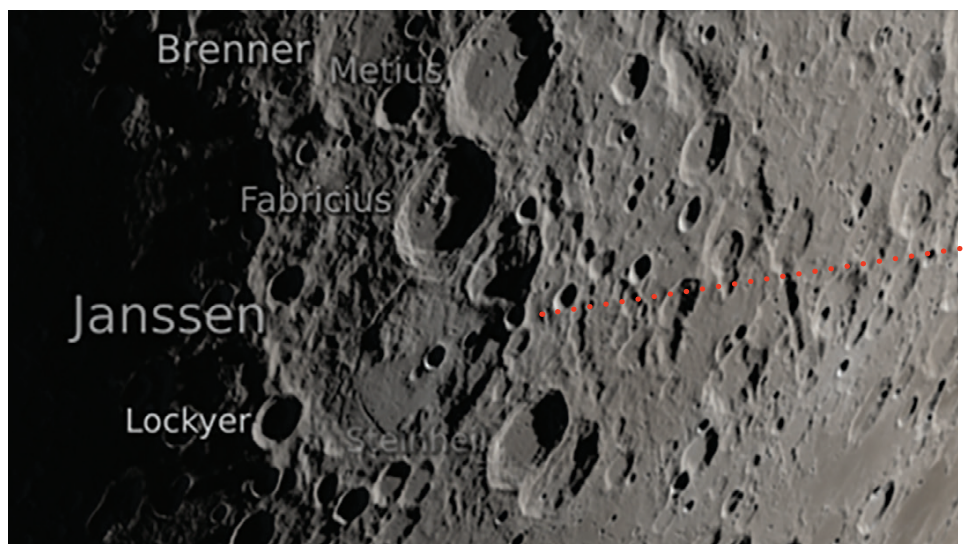


Fracastorius was filled with lava from Mare Nectaris. The northern wall was completely covered after the area subsided from weight of that ancient lava. No central peak is visible. You may be able to see a rille crossing Fracastorius just south of its center.

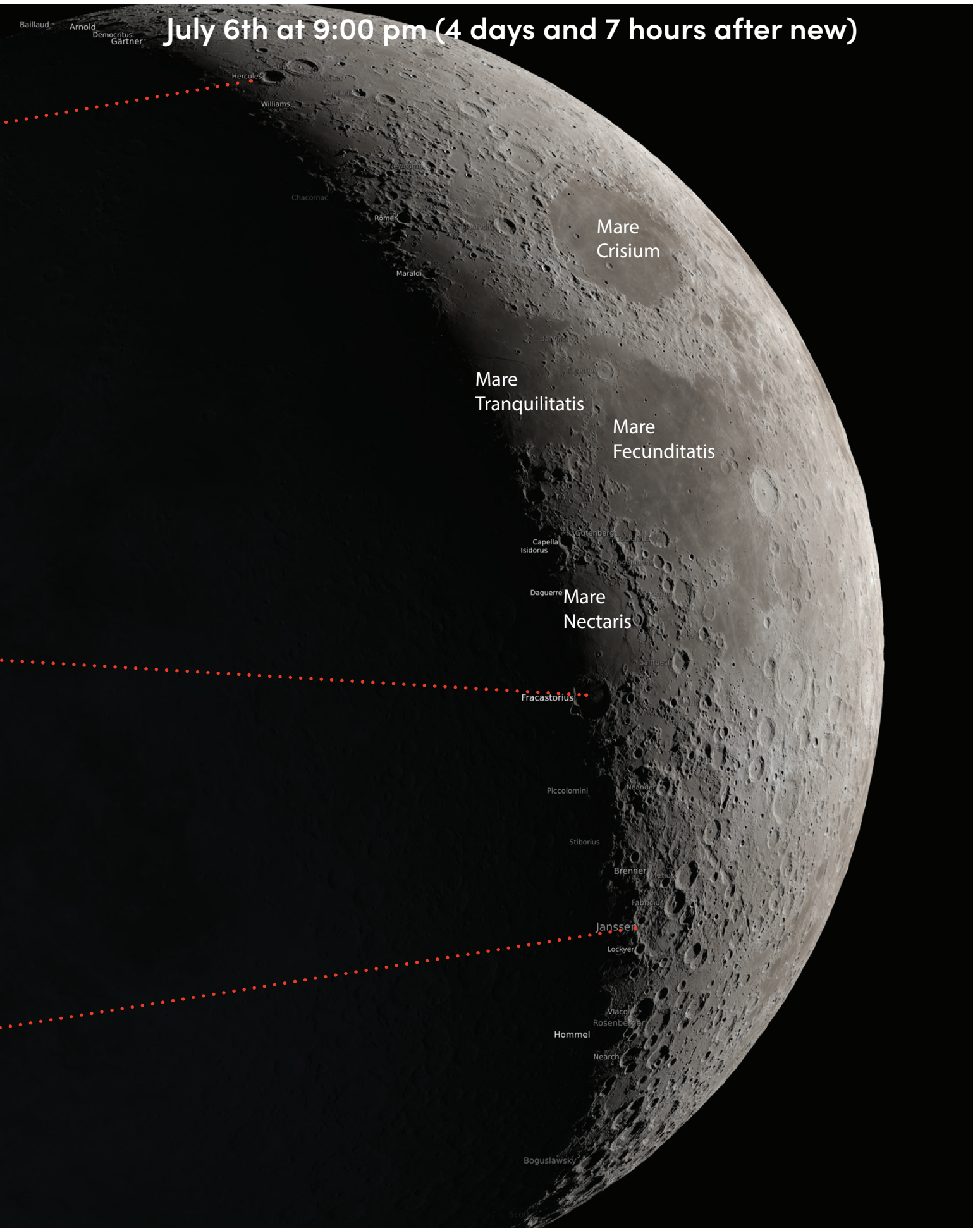
Crater Janssen located on the Moon's southeastern limb is about 125 miles in diameter. The entire crater is heavily worn and ill defined with somewhat hexagonal shape.

The prominent crater Fabricius lies within the limb of Janssen.

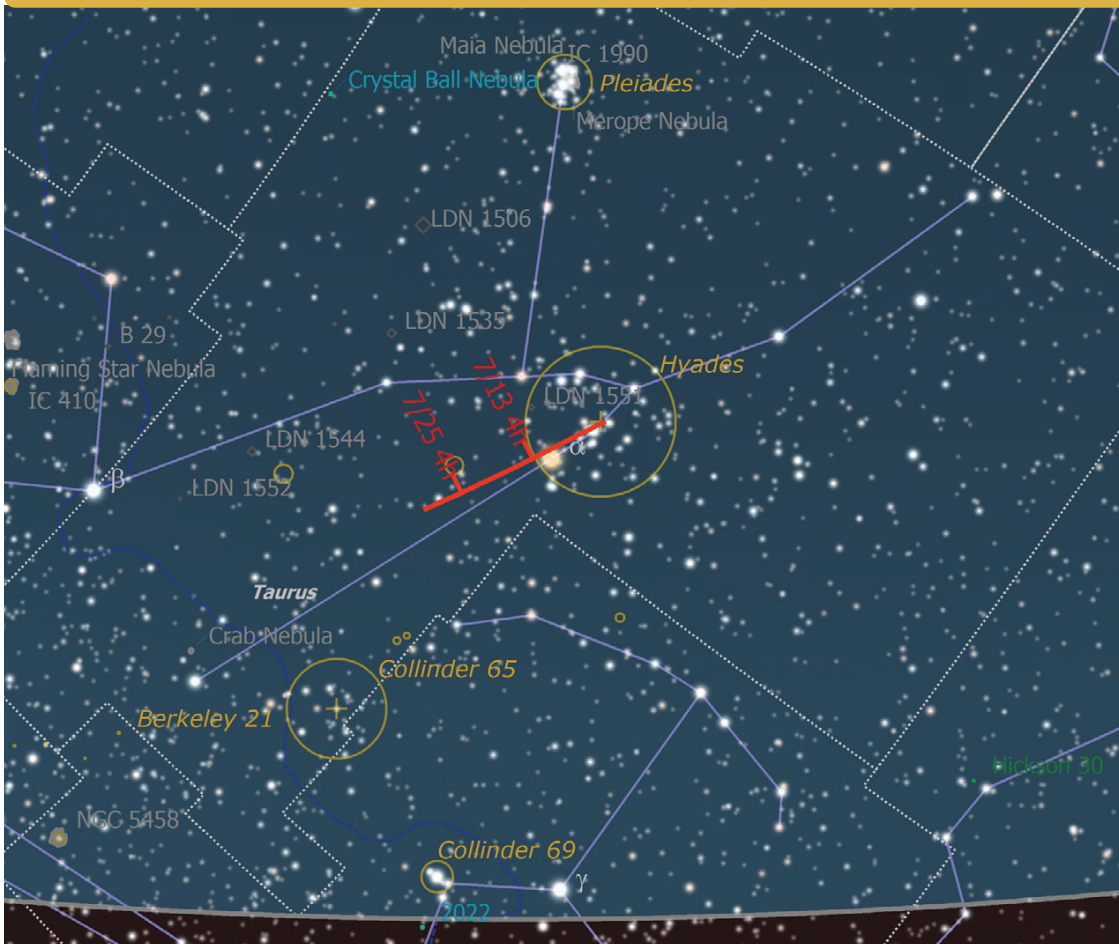
The large prominent curved rille in the southern part is called Rimmae Janssen.



July 6th at 9:00 pm (4 days and 7 hours after new)



Comets



C/2017 T2 (PanSTARRS)

Comet C/2017 T2 (PanSTARRS) is in the constellation Taurus. It is magnitude +8 in brightness. The comet's coma is about 7 arc min across. The best time to view it is about 4:20 am this month.



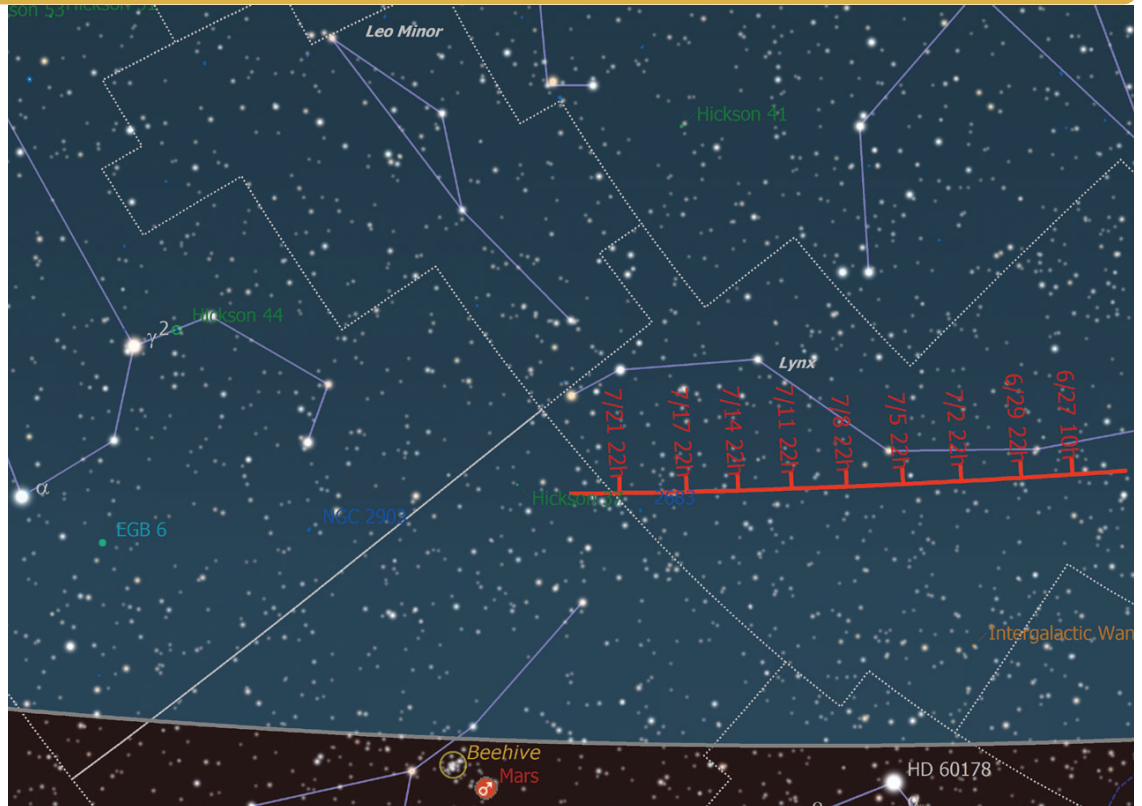
29P Schwassman-Wachmann

Comet 29P Schwassman-Wachmann is predicted to brighten slightly from magnitude +9.8 at the first of the month to magnitude +9.6 by end of the month. The coma increases in size from 7.7 arc min to 8.5 arc min.

Comets

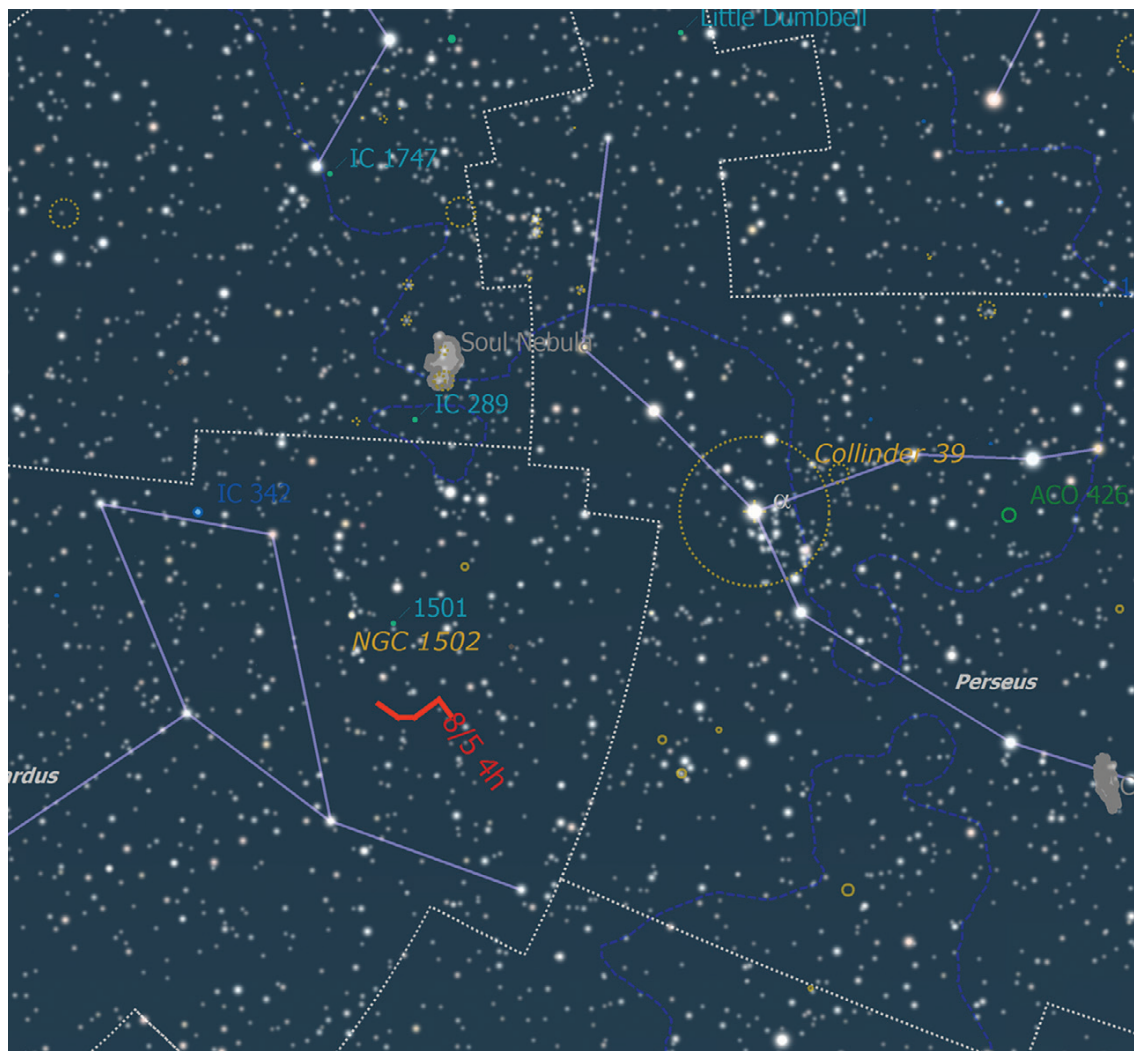
C/2018 R3 (Lemmon)

Comet C/2018 R3 (Lemmon) is currently in constellation Lynx. It is magnitude +10.5 to +10.8 in brightness. However, it is very low and difficult now; it will be much worse by mid month. The coma size is 2.3 arc min across.



C/2018 W2 (Africano)

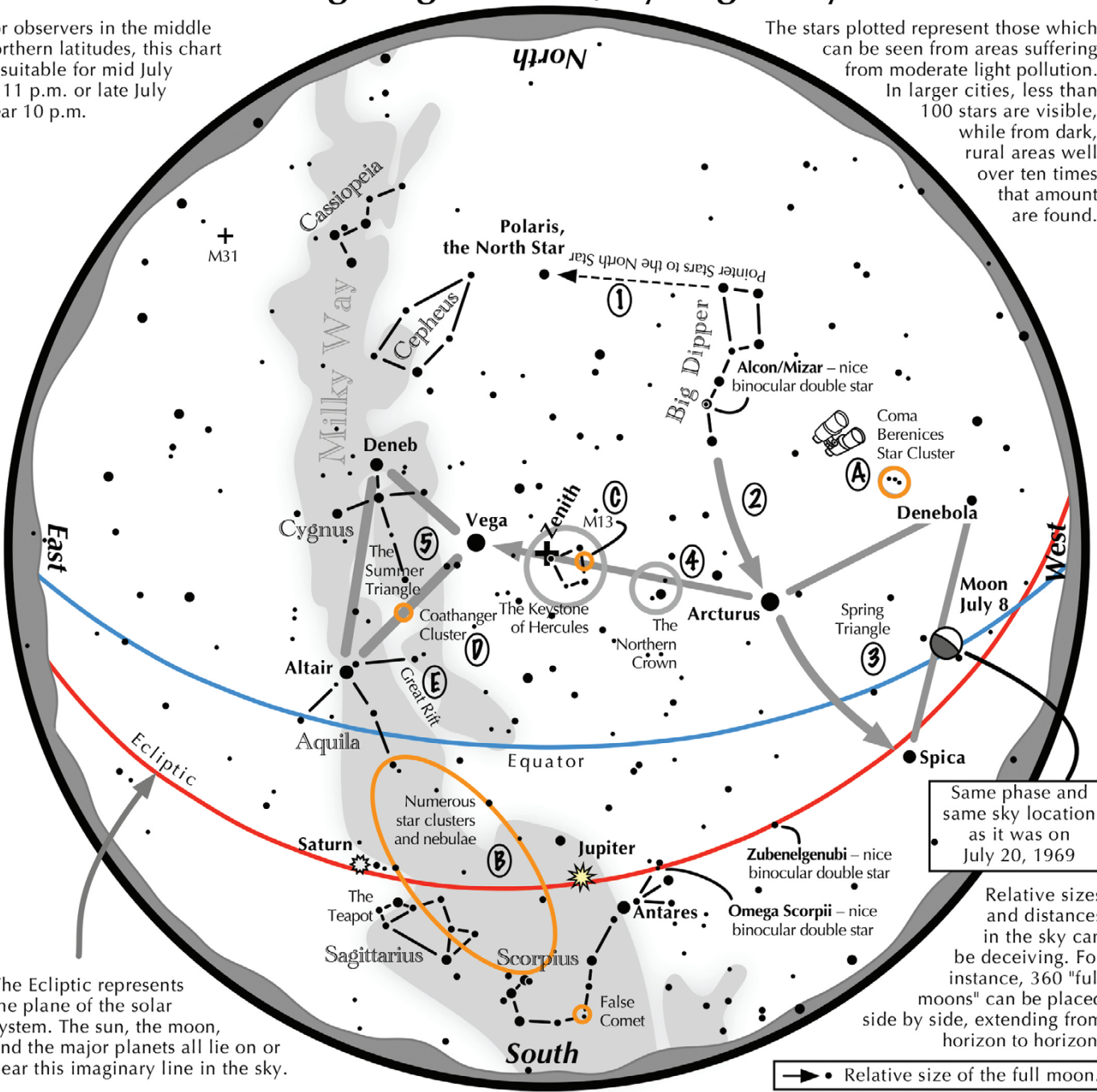
Comet C/2018 W2 (Africano) begins the month in constellation Camerlopardalis at magnitude +12.8 and brightens to +11.5 by the end of the month. It is predicted to be magnitude +9 by October. It was discovered by B. M. Africano with Mount Lemmon Survey and H. Groeller with the Catalina Sky Survey.



Navigating the mid July Night Sky

For observers in the middle northern latitudes, this chart is suitable for mid July at 11 p.m. or late July 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.

Same phase and same sky location as it was on July 20, 1969

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 July 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 first intersects Arcturus, the brightest star in the July evening sky, then continues to Spica.
- 3 Arcturus, Spica, and Denebola form the Spring Triangle, a large equilateral triangle.
- 4 To the northeast of Arcturus shines another star of similar 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.
- 5 High in the East lies the Summer Triangle stars of Vega, Altair, and Deneb.

Binocular Highlights

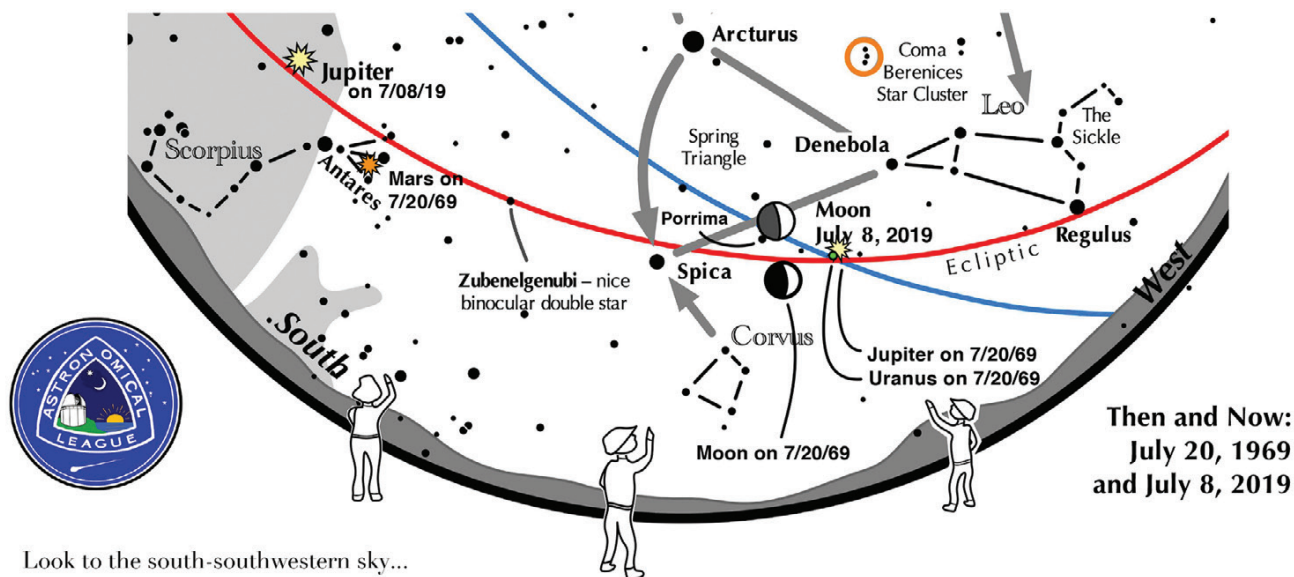
- A: Between Denebola and the tip of the Big Dipper's handle, lie the stars of the Coma Berenices Star Cluster.
- B: Between the bright stars Antares and Altair, hides an area containing many star clusters and nebulae.
- C: On the western side of the Keystone glows the Great Hercules Cluster, containing nearly 1 million stars.
- D: 40% of the way between Altair and Vega, twinkles the "Coathanger," a group of stars outlining a coathanger.
- E: Sweep along the Milky Way for an astounding number of faint glows and dark bays, including the Great Rift.

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



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

See how the moon appeared on the night of the Apollo 11 landing



Look to the south-southwestern sky...

- 75 minutes after sunset.
- On July 8, 2019, the moon is positioned in nearly the same spot in the sky as it was on July 20, 1969.
- On July 20, 1969, the moon's phase was 6.5 days, or 1 day shy of first quarter. On July 8, 2019, the phase is 6.3 days.
- On July 20, 1969, Jupiter shone just to the moon's right.
- On July 20, 1969, Uranus was in conjunction with Jupiter, lying 30 minutes south of the giant planet. Both planets would have been in the same telescope field of view. It would have surely been an attraction to star gazers, if the moon landing wasn't about to take place.
- On July 20, 1969, Mars was low in the south in Scorpius, shining brighter than Arcturus, but dimmer than Jupiter.
- During the moon walk, the moon had already set for East Coasters, while it was visible in the southwest for West Coasters.
- July 20, 1969 was a Sunday.

From Our Newsletter Archives

July 2009



The July 16, 2009 meeting is in the Community Room at Front Range Community College. The speaker will be Allen Jeeter. He is a professional phot-

tographer and an amateur astronomer who is interested in imaging the night sky. Rather than investing large sums of money on expensive mounts, telescopes, and cameras, Allen has taken a less expensive approach. Learn how Allen produces his impressive astrophotos using affordable gear.

Next month the FRCC will probably be closed as they are between summer and fall semesters. Also the annual Fox Park Star party starts the same day as our meeting, so not many of us would make it even if we could get in the building. We will have an informal LAS "meeting" at 7 pm Friday, Aug. 21st, up at Fox Park, somewhere near Gary's RV in the north part of the east observing field.

July 1999



The July 15, 1999 meeting was held at Roosevelt Park. The speaker was Jim Crane. Jim spoke of his involvement with

the QuikSCAT Satellite, a radar that will be used for weather predictions. He worked on the satellite from when it left Boulder to California from where it was launched on June 19, 1999.

July 1989

There was no newsletter published for July 1989.

LAS July 20 Meeting Minutes by Joe Hudson

Thursday, June 20, 2019

1900 hours MDT

Location: First Lutheran Church,
3rd and Terry Street
Longmont, Colorado.

Bill Tschumy, President, opens and moderates:

Introductions

Welcome to new members
Aiden Davis and Dr. Egeland (who is tonight's speaker).

One visitor present (name not recorded).

Introduction of Officers did not take place but they are recorded here - same list as last, and next, month:

President: Bill Tschumy

Vice President: Stephen Garretson

Treasurer: Marty Butley

Secretary: Joe Hudson

Board members:

Vern Raben

David Elmore

Tally O'Donnell

Brian Kimball

Gary Garzone

Announcements

• June 25 @ 6:30 Astronomy on Tap, please attend as the location is under consideration for this meeting

• June 21 First RMNP Star Party of the year, details at www.nps.gov/romo/planyourvisit/astronomy_programs.htm.

• June 26 @ Rocky Mountain Star Stare rmss.org

• July 6 LAS / BCPOS Star Party at Rabbit Mountain 8 to 11:30 p.m.

• July 18 LAS Monthly Meeting: Steve Albers will speak on seeing and atmospheric Issues for Earth based Astronomy

Dynamic Magnetic Behavior of Stars, Dr Ricky Egeland, NCAR

Dr. Egeland opened his talk with a short review of stellar types along an RH-like diagram while explaining that most popular focus is on a star's death... the nova, super novae, and compact objects of degenerate matter that remain. But Dr Egeland would argue that the day to day dynamism in a star's magnetic field is a far richer bed for research and investigation... and by that provide benefit to mankind as we better understand the star that keeps us alive.

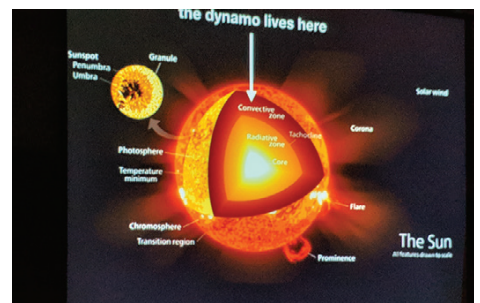


Dr. Egeland shared some amazing video loops of the solar disk, sunspots, and corona in many different wavelengths, and by this pressed the point of our obser-

vational coverage of the sun and the information that different wavelengths would present.

What is responsible for all this dynamism? And sun spots in particular? The solar body as a sphere is a huge dynamo; one that rotates at different rates at different latitudes and depths. So while the rotating core is generating the Sun's magnetic field, the varying rates of rotation cause these intense magnetic field lines to interact, join, and form loops from which the entry and exit points of the interacting lines is at or forms a sun spot by

inhibiting hot gas flow from below and surrounding regions. That spot becomes a little 'stagnant' and cools (sun spots really are not dark, they're simply ~ 2000K degrees cooler than the surrounding region). Dr. Egeland spent time describing 'solar minimums', those times when sunspot activity is vastly reduced or absent, i.e. the Maunder minimum and others that interrupt the Sun's normal 11 year sunspot cycle.



Dr. Egeland says that there are options for amateurs to participate in solar spectroscopy, sharing again how valuable spectroscopy is for a variety of examinations of the sun and stars to better understand their operable dynamo.

Dr. Egeland says that there are options for amateurs to participate in solar spectroscopy, sharing again how valuable spectroscopy is for a variety of examinations of the sun and stars to better understand their operable dynamo.

In his closing, Dr. Egeland expressed his simple desire for a model that would clearly explain the



entirety of solar observations in a consistent manner.

Please consider these two online resources for access to Dr. Ege-land's papers and research.

<https://staff.ucar.edu/users/ege-land>

<http://rickyegeland.com/>

Business Meeting

Finance Report by Marty Butley

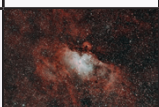



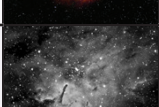
- Marty reviewed club financials and membership.
- "Anonymous" donation from Daniel J Enders \$200 for room expenses
- "Storm Trooper Award" presented to Tally and Bill Tschumy for their commitment to the club, star parties, and specifically, outlasting stormy weather in the latest outing.
- Received a book to review - please see Bill to volunteer
- Vern - Paper newsletter is available for \$4

Prior Business: Meeting location

- FRCC classroom guaranteed or Community Room (unsure of access but great set up)
- 'Astronomy on Tap' location in Gunbarrel - please attend as we consider the same room as new meeting space. Their next meeting is next Tuesday, tickets on the web site but are free, LAS website has links to 'Astronomy on Tap' website.

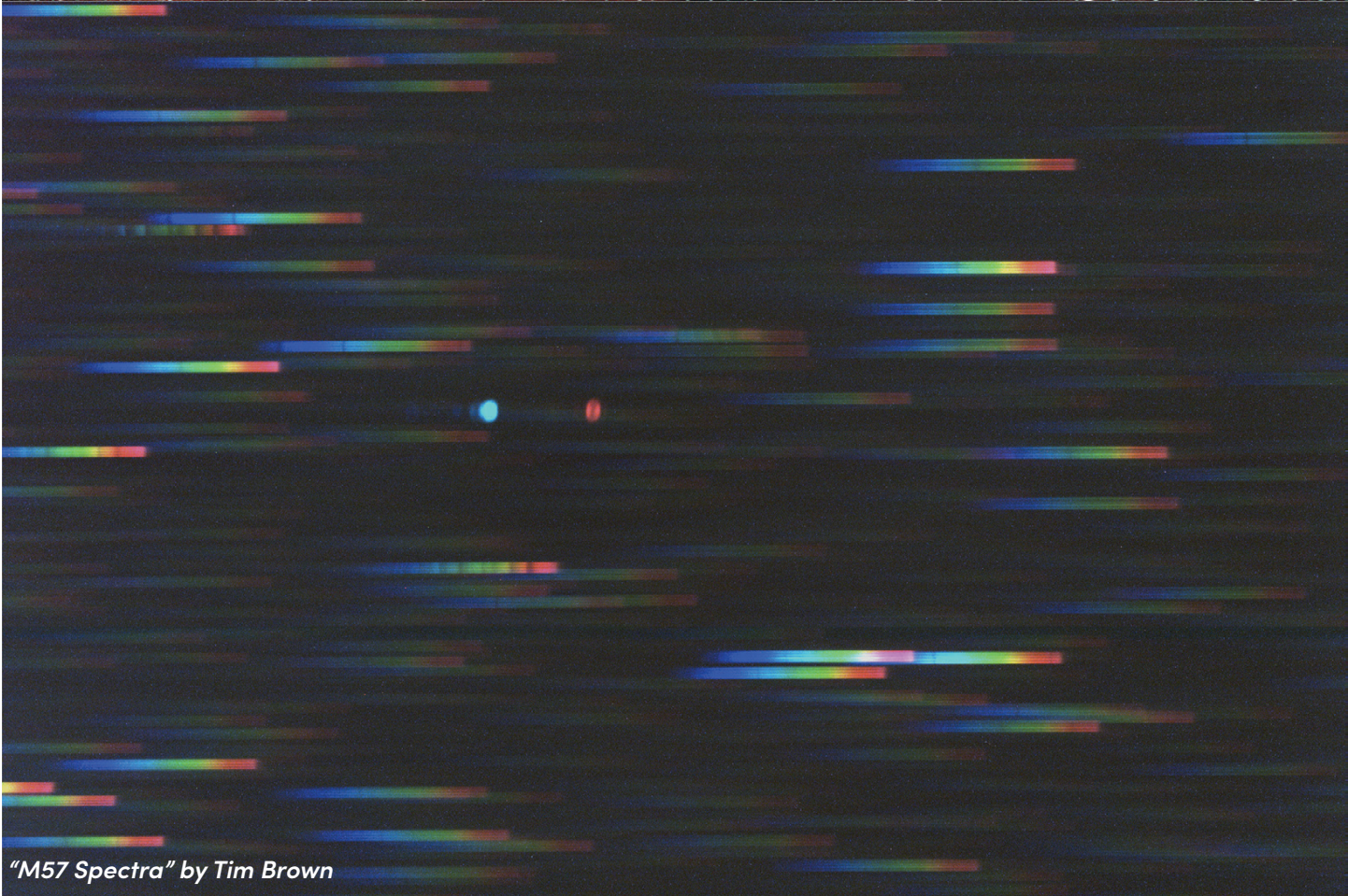
No new business, meeting adjourned.

Image Contributors and Details

Page	Image	Author	Scope	Camera	Description
1		David Elmore	Vixen VSD100 at F/3.8	ZWO ASI 1600MM	M 8 "Lagoon Nebula", June 14. Filters: H-Alpha 5@20 min, OIII 5@20 min. Southern NM.
14		Tim Brown	ATM 128mm refractor, Hotech field flattener	Modified Canon 7Dii	M57 "Spectra", June 18. UV-blocking filter 20@60 sec.
14		David Elmore	Vixen VSD100 at F/3.8	ZWO ASI 1600MM	M16 "Eagle Nebula", June 14. M 8 "Lagoon Nebula", June 14. Filters: H-Alpha 4@20 min, OIII 7@20 min. Southern NM.
15		Gary Garzone	Celestron C14	SBIG STL 11000 OSC	M56 "Lyra Globular Cluster", June 11.
15		Gary Garzone	Celestron C14	SBIG STL 11000 OSC	M13 "Hercules Globular", June 16.
16-17		Stephen Garretson	Dual William Optics FLT 132 APO	ZWO ASI183MM	"West Veil", June 15. Filters: Baader 8.5nm OIII 22@300s, Baader 3.5 mm Ha 22@300s
18		Eddie Hunnell	Celestron RASA 11" f2.2	ZWO ASI128MC Pro	M27 "Dumbbell Nebula", June 28.
18		Eddie Hunnell	Celestron RASA 11" f2.2	ZWO ASI128MC Pro	M31 "Andromeda Galaxy", June 30. LPS Filter: 11@4 min
19		M.J. Post	Celestron RASA 11" f2.2	QHY 183 color and mono cameras	NGC 5033 & 5005 "Galaxy pair in Canes Venatici", June 30.
20		Brian Kimball	5" APO refractor scope	Imaging Source DMK41	Sun in Ca K, June 16
20		Brian Kimball	Lunt LS100 H-alpha scope	Imaging Source DMK41	"Sun in Ha on 6/15", June 16. "Active Region" June 24.
21		Stephen Garretson	Dual William Optics FLT 132 APO, WO 68II flattener	ZWO ASI183MM	"Dual 132s", June 12. Scopes are on JTD Dual Rig Aiming Saddle and mounted on Paramount MX+ mount.
22-23		M. J. Post	Celestron RASA 11" f2.2	QHY 183	M16 "Eagle Nebula", June 26. OPT quad band filter: 18@5 min.
24-25		Martin Butley	Takahashi FSQ130ED		M8 "Lagoon Nebula", June 5. Filters: Ha 16@5 min, SII 16@5min, OIII 16@5min
26		M. J. Post	Celestron RASA 11" f2.2	QHY 183M	"Sharpless 86", June 29. Ha 1 hour combined exposure
27		M. J. Post	Celestron RASA 11" f2.2	QHY 183 OSC	"M16 Eagle Nebula", June 26. Opt quad narrow band filter ((H-a, H-b, O III, S II) 9@5 min
32		Eddie Hunnell	Celestron RASA 11" f2.2	ZWO ASI128MC Pro	"Trifid, Lagoon, and NGC 6544 globular cluster"



"Eagle Nebula" by David Elmore



"M57 Spectra" by Tim Brown



"M56 Globular" by Gary Garzone



"M13 Globular in Hercules" by Gary Garzone



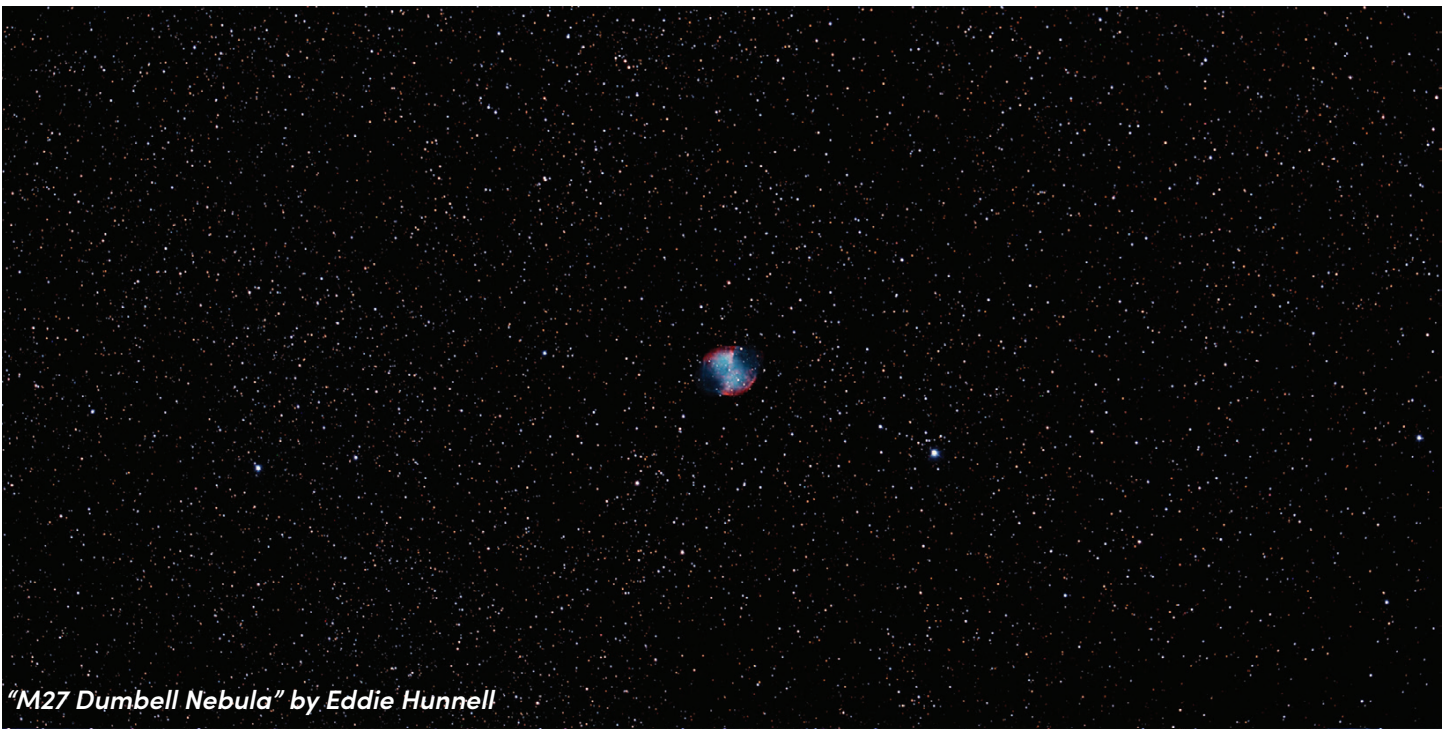
"Western Veil Nebula" by Stephen Garretson



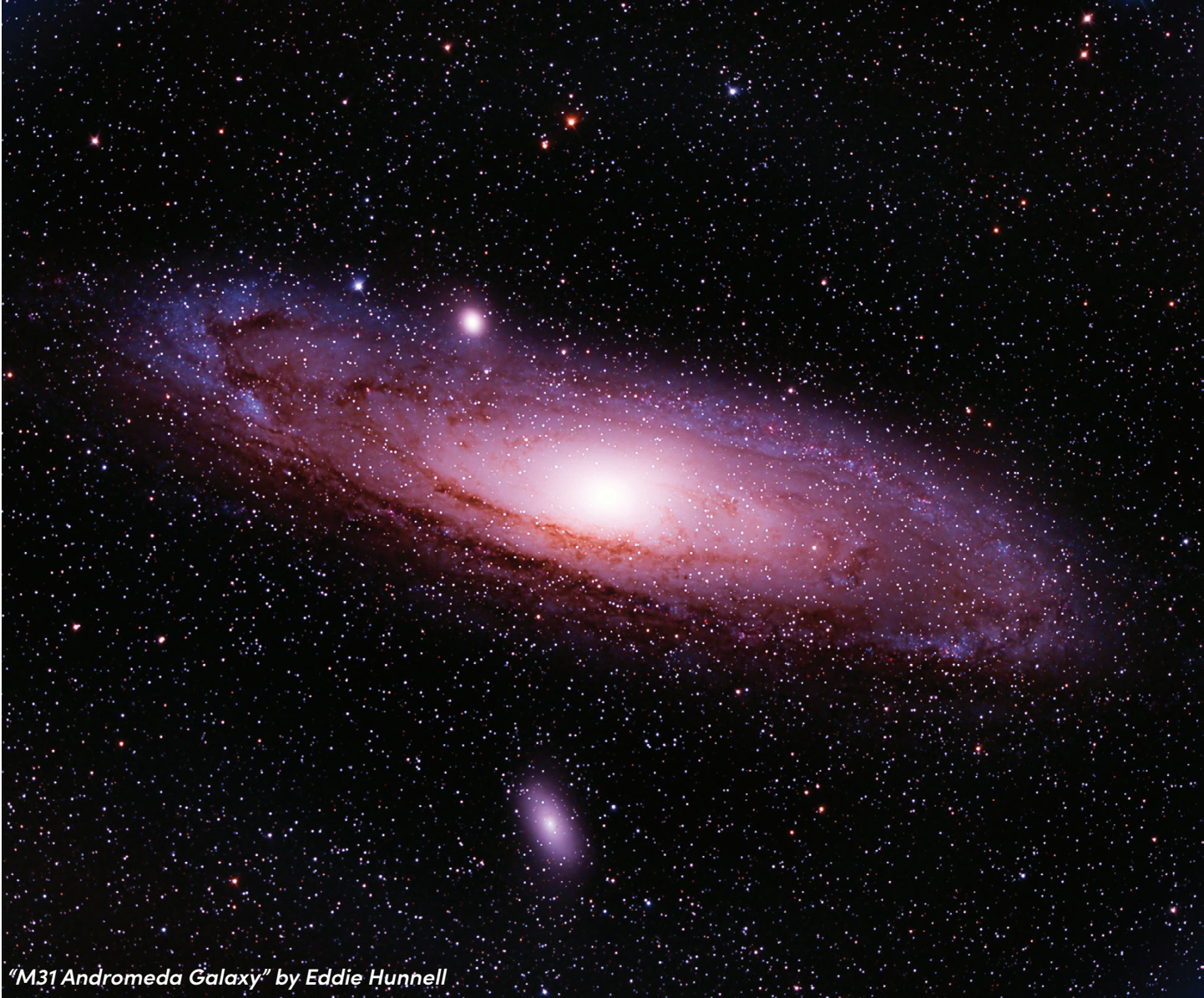


"M16 Eagle Nebula" by M. J. Post





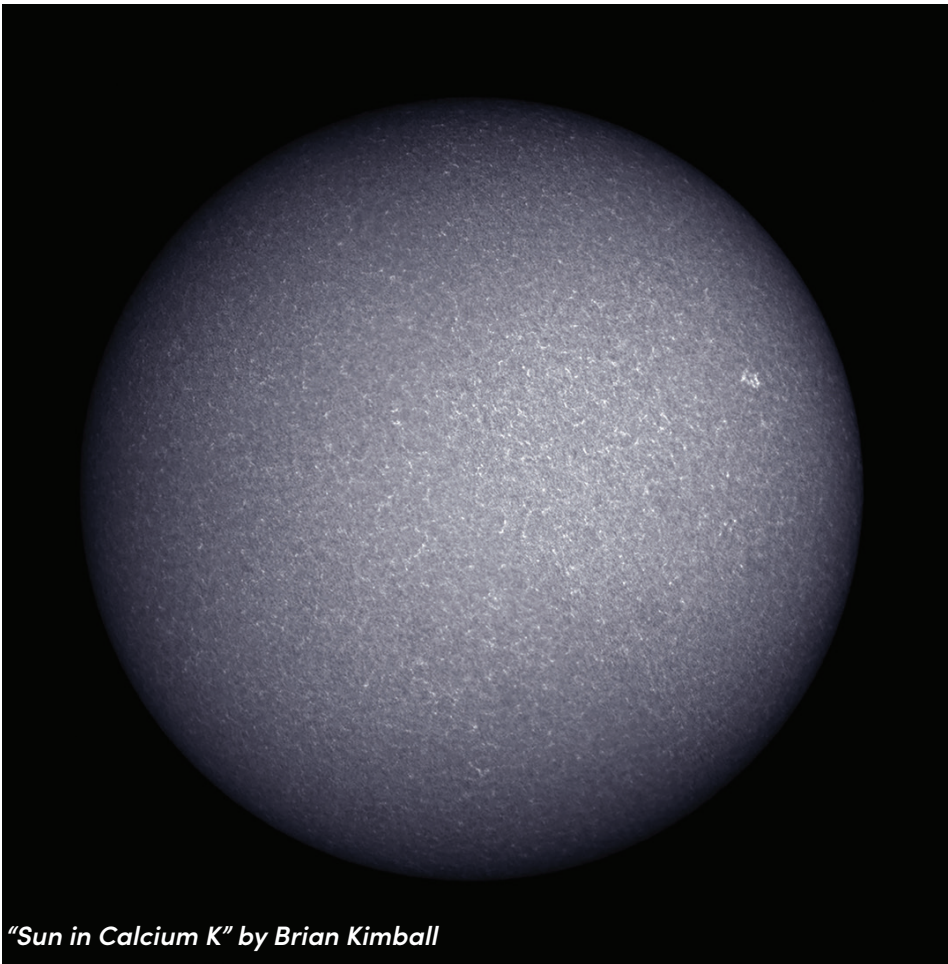
"M27 Dumbbell Nebula" by Eddie Hunnell



"M31 Andromeda Galaxy" by Eddie Hunnell



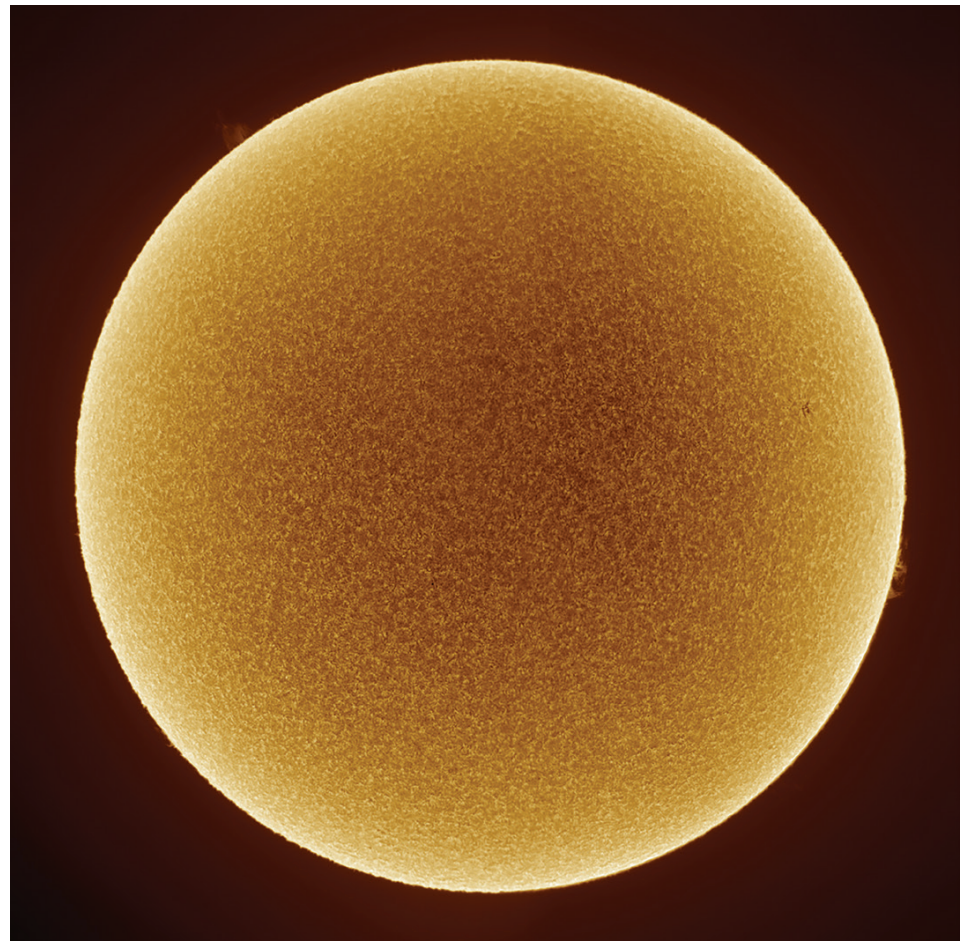
"NGC 5033 & NGC 5005" Galaxy Pair " by M. J. Post



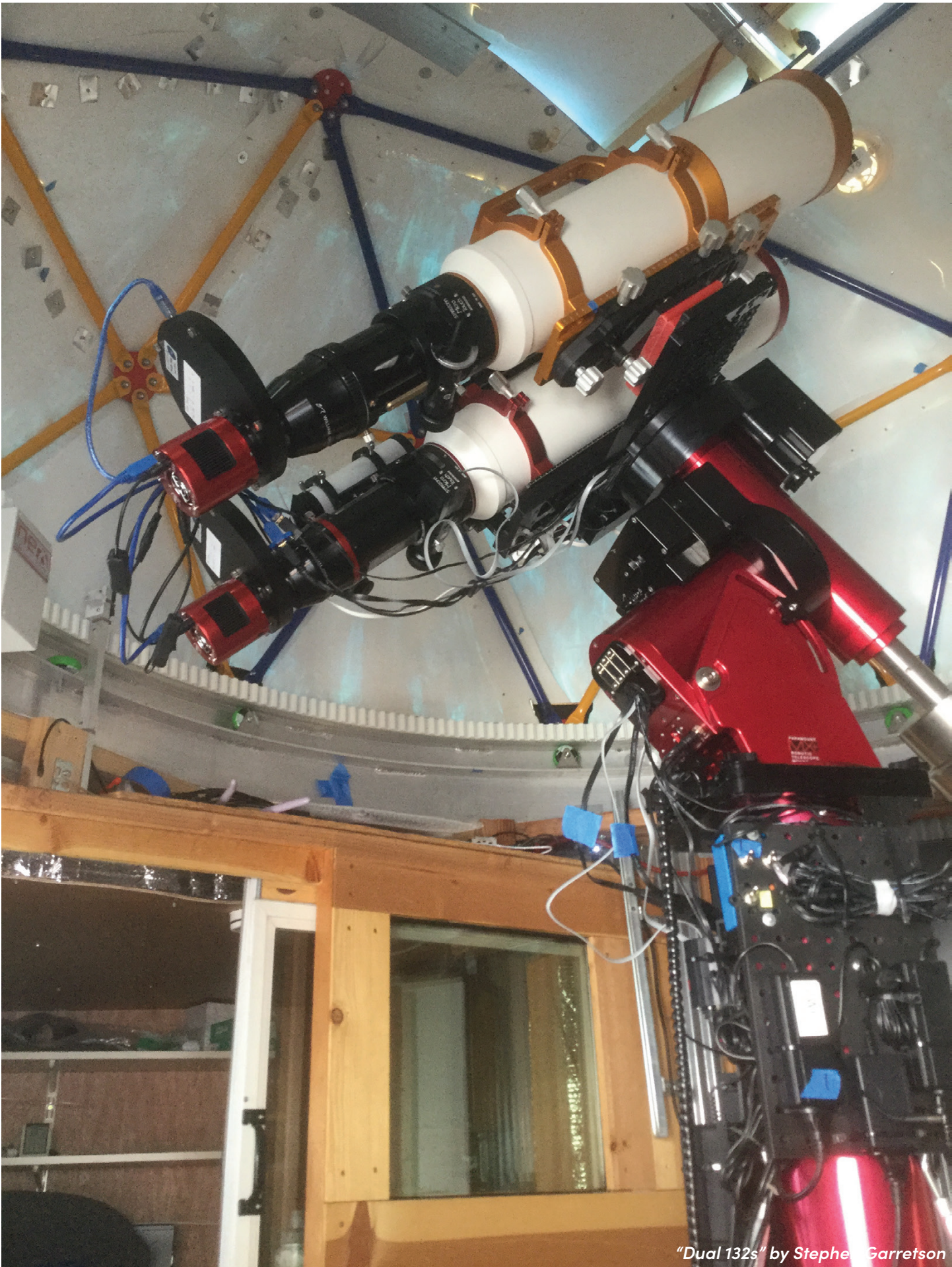
"Sun in Calcium K" by Brian Kimball



"Active Solar Region in H-Alpha" by Brian Kimball



"Sun in H-Alpha" by Brian Kimball



"Dual 132s" by Stephen Garretson

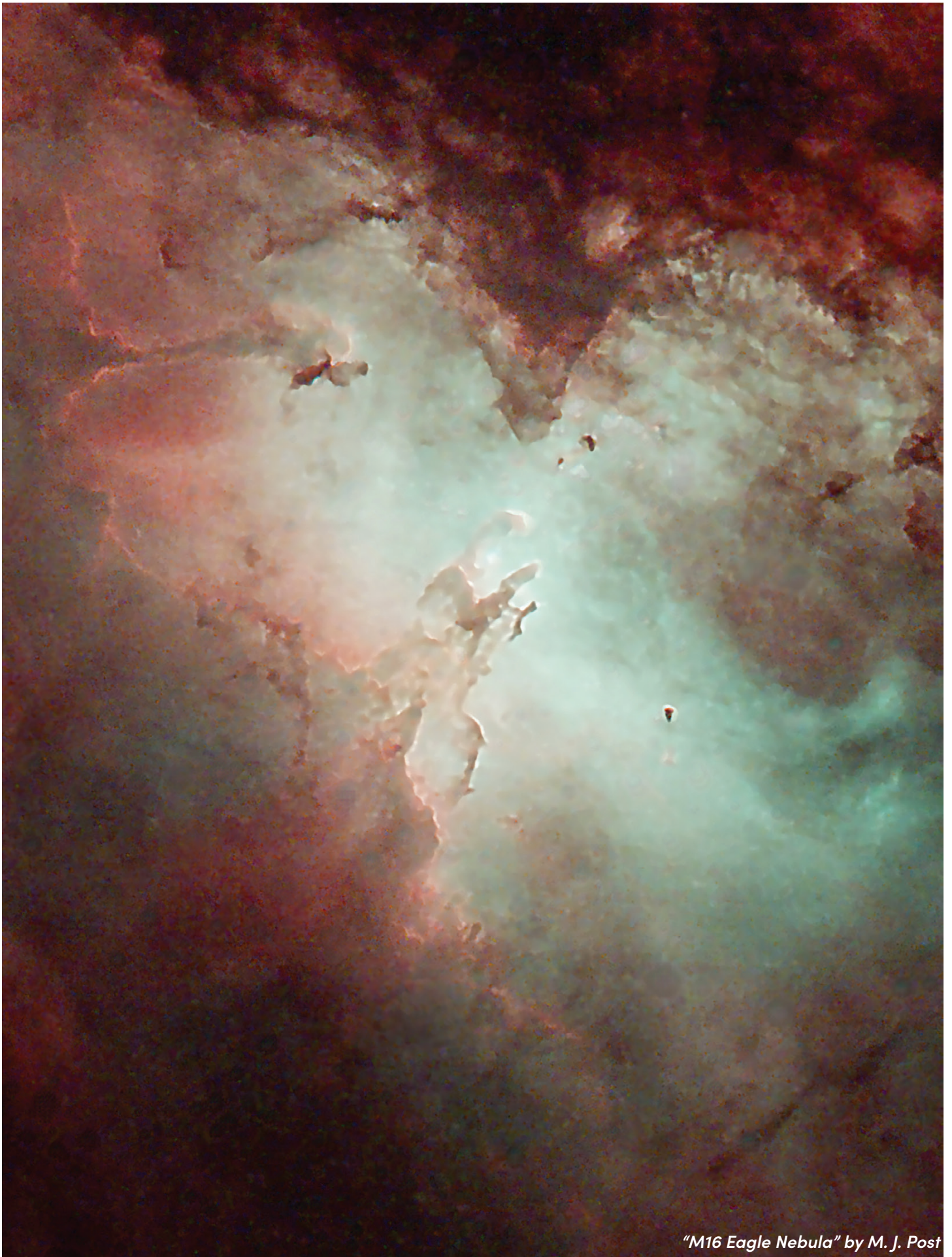


"M8 Lagoon Nebula" by Marty Butley





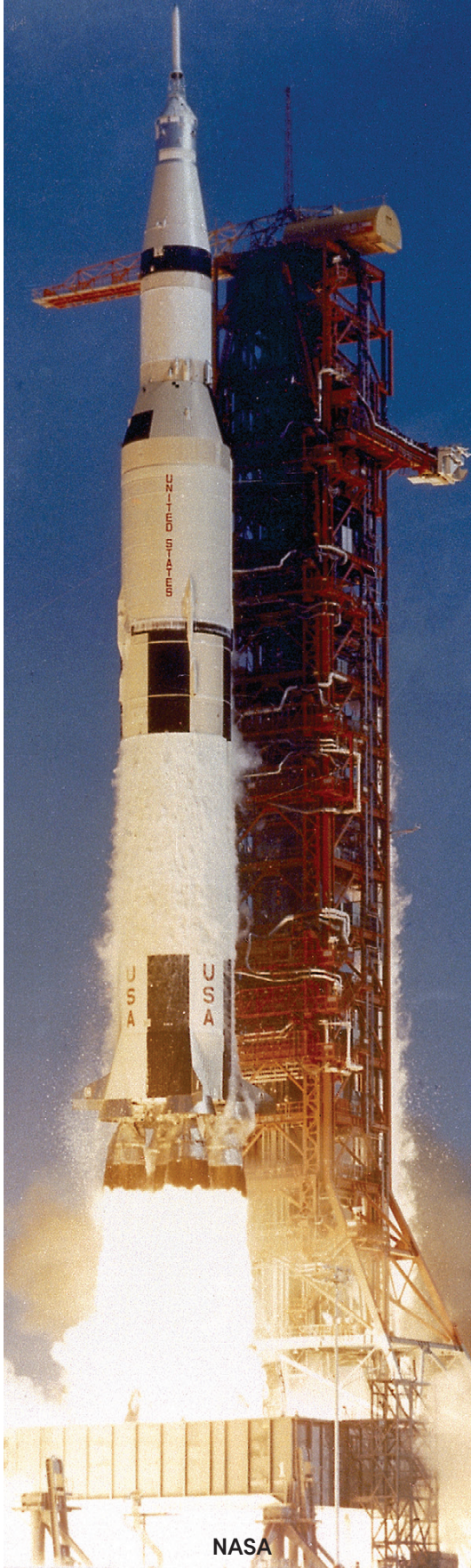
"Sharpless 2-86" by M. J. Post



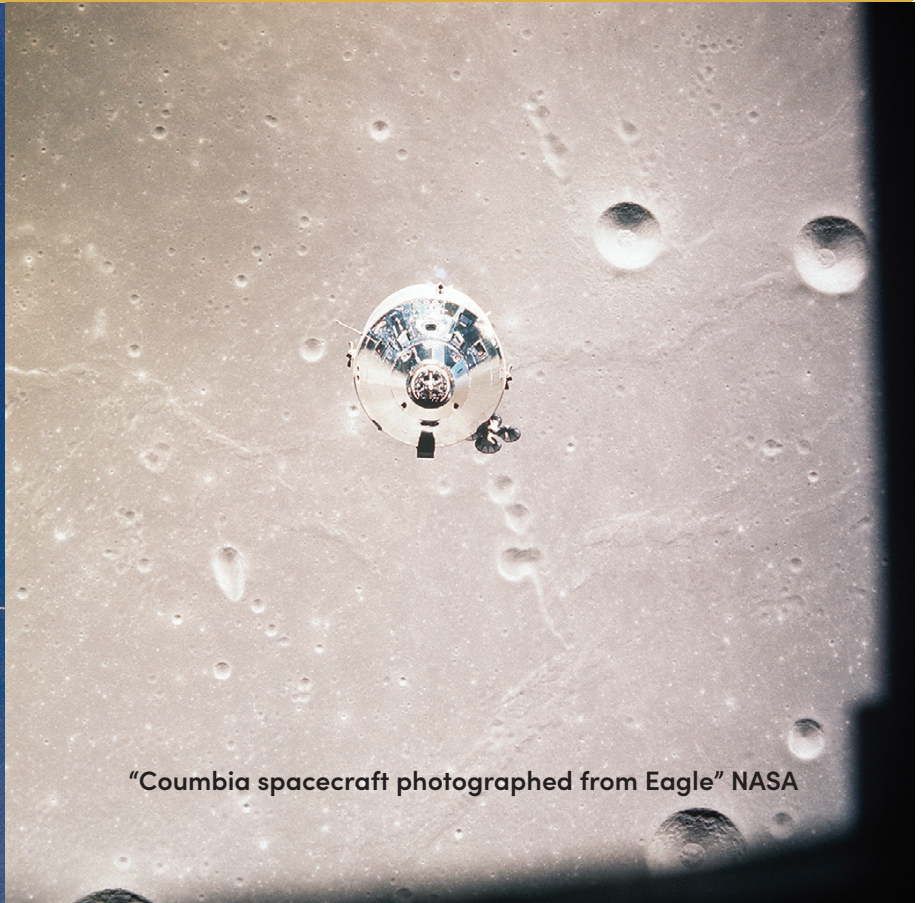
"M16 Eagle Nebula" by M. J. Post

Apollo 11 50th Anniversary

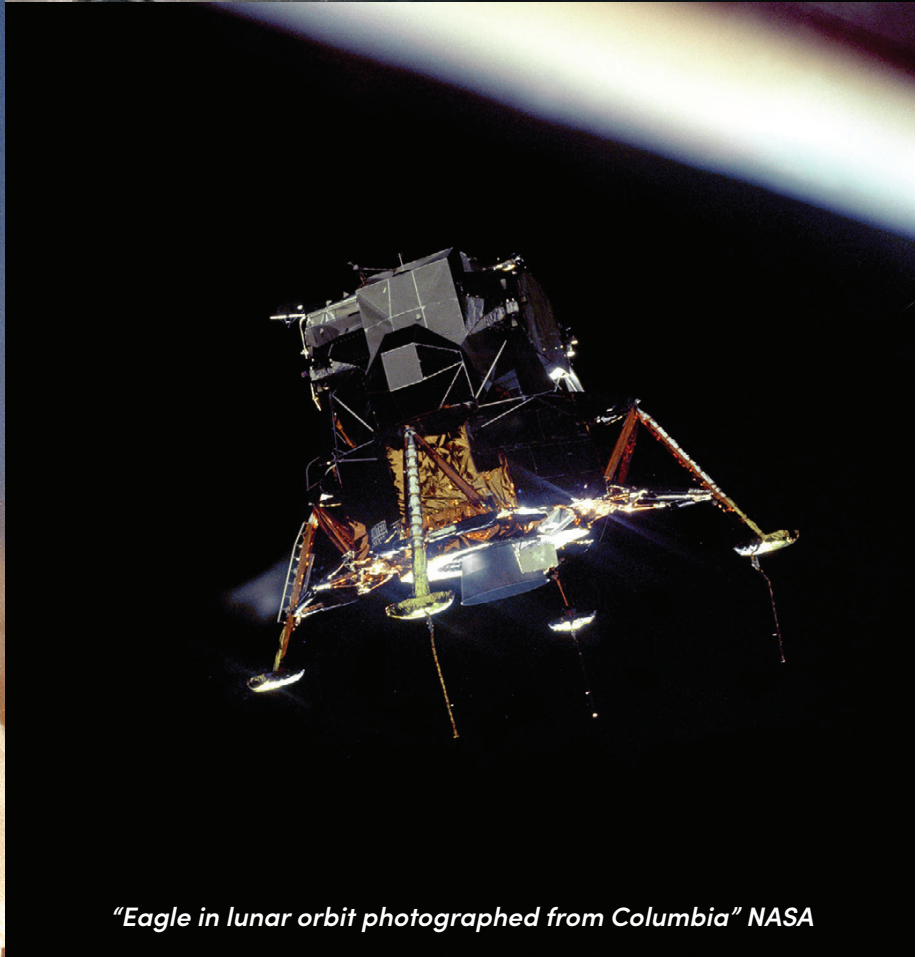
Liftoff on July 11, 1969 at 7:32 am MDT



NASA

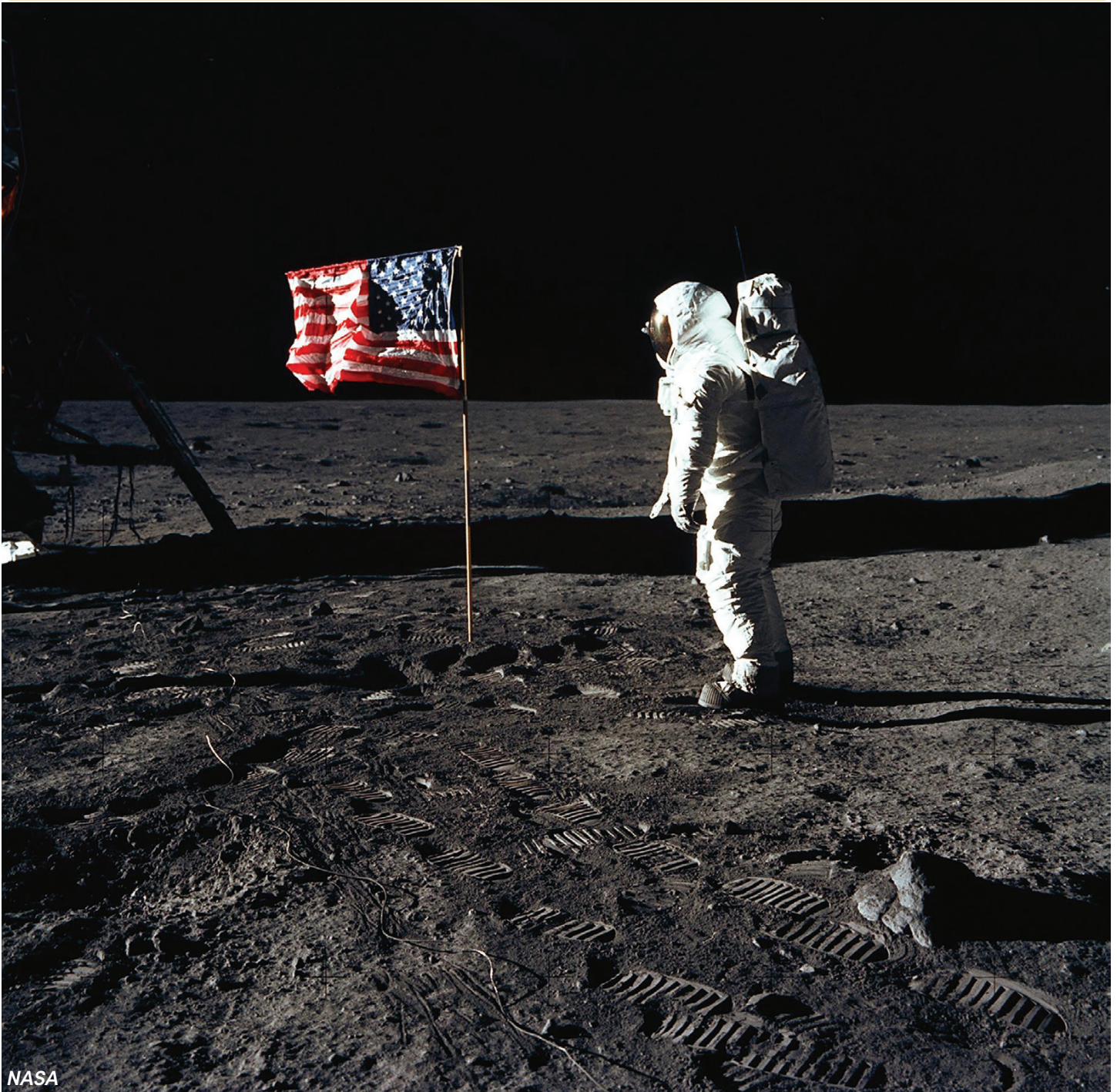


"Columbia spacecraft photographed from Eagle" NASA



"Eagle in lunar orbit photographed from Columbia" NASA

Apollo 11 50th Anniversary



50 years ago on July 16 of this month two astronauts from the United States left their foot prints on the surface of the Earth's moon. That accomplishment required an enormous effort from 400,000 engineers, scientists, and technicians from more than 20,000 companies and universities. When President Kennedy announced the goal of landing on the moon before congress on May 25, 1961 the technology, hardware, and technical workforce needed did not yet exist. The technical challenges were enormous. The decisions to solve a multitude of problems were innovative, creative, and often elegant. Many, many people spent countless overtime hours to meet the challenge. Eight years later on July 16, 1969 at 2:18 pm MDT that goal was accomplished when Neil Armstrong radioed "Houston, Tranquility Base here. The Eagle has landed."

Astronomy Headlines

On June 27 NASA announced that a dual quadcopter drone will be sent to Saturn's moon Titan to take scientific measurements. It will study Titan's atmosphere, surface conditions, surface composition, and perform seismic studies.

It will fly about a kilometer or so each Titan day (about 16 Earth days). It should cover several hundred kilometers during its 2 year mission.

Dragonfly will launch in 2026 and land on Titan in 2034.



Dragonfly Drone to Titan



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Lagoon Nebula (M8) by Eddie Hunnell