Longmont Astronomical Society
February 2019 Newsletter

Lunar Eclipse on January 21 by Rolando Garcia

LAS Meeting - February 21 at 7pm - IHop

"Imaging HII regions, protostellar outflows, and transients" by Dr. John Bally, University of Colorado, CASA

The HII region Sh2-129 in Cepheus in a H-alpha and [OIII] wide-field image, 4 degrees across. This object is next door to the often-imaged IC1396. Deep images of other HII regions, especially in [OIII], might reveal other, similar ejections (Image Credit: Rolf Geissinger / APOD 27 October 2016).

What do narrow-band images in H-alpha, neutral and ionized oxygen, and sulfur show? How can these images be used to derive physical properties of ionized nebulae?

I will discuss how small telescopes, CCD (or CMOS) cameras, and narrow-band filters enable amateurs to make discoveries. The key is the accumulation of hours to tens of hours of total exposure time in narrow-band filters. A giant, 15 parsec-long, bipolar flow, called Ou4 in Sh2-129 in Cepheus, which may have been powered by a stellar merger about 100,000 years ago, was found by an amateur, Nicolas Outters.

Shorter exposure, broad-band images with small telescopes or telephoto lenses have also identified luminous, accretion powered, stellar outbursts called FU Orionis and EXOr events on forming stars which result in the emergence of new, but transient nebulae such as McNeil's Nebula.

John Bally

Featured Images

The front cover this month is Rolando Garcia's image of the February 21st lunar eclipse.

Center fold image this month is the Orion Nebula by Clarke Yeager.

The "Iris Nebula" by M. J. Post is on this month's back cover.

Contents

Contributors

Vern Raben - Newsletter Editor
Joe Hudson - LAS Meeting Notes
Images by: Mary Butley, David Elmore, Chris Fauble, Glenn Frank, Rolando Garcia, Stephen Garretson, Gary Garzone, Eddie Hunnell, Tally O'Donnell, M. J. Post, and Clarke Yeager.

About LAS

The Longmont Astronomical Society is a 501 c(3), non-profit corporation which was established in 1987. The Longmont Astronomical Society's 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 IHop Restaurant, 2040 Ken Pratt Boulevard in Longmont. Meetings are open to the public and begin at 7:00 PM. A group of us have dinner at the IHop before the meeting around 6 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.

Join LAS at: https://www.longmontastro.org/membership

Solar System Highlights

New moon: Feb 4 at 2:05 pm

First quarter: Feb 12 at 3:27 pm

Full moon: Feb 19 at 8:55 am

Third quarter: Feb 26 4:29 am

Image credit: Brian Kimball

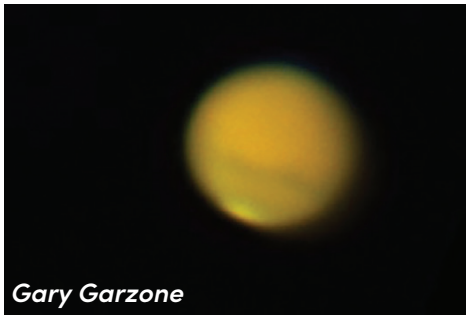
Mercury

Mercury re-appears very low in the West after February 20th in constellation Aquarius; it moves into Pisces on the 22nd. It will be -0.9 magnitude in brightness and the planet's disk will be about 7 arc sec across.

Venus

Venus is visible in the morning sky in constellation Sagittarius all month. It moves closer to the horizon each day. It begins February at magnitude -4.3 and decreases to magnitude -4.1 at the end. Its disk decreases from 19 arc sec across to 15 arc sec.

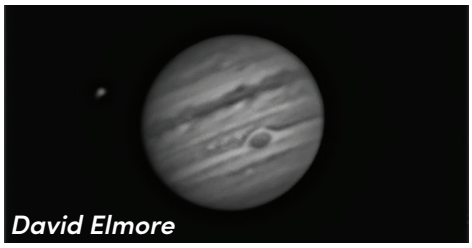
Mars



Gary Garzone

Mars is visible high up in the evening sky in constellation Pisces but is moving downwards towards the horizon each days. It decreases in brightness from magnitude +0.9 to +1.2 this month; its disk decreases in apparent size from 6.1 to 5.2 arc sec across.

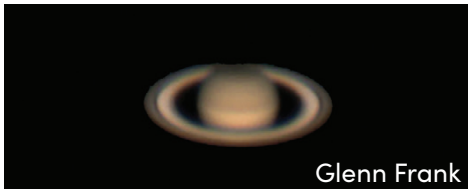
Jupiter



David Elmore

Jupiter continues moving through the southern part of the constellation Ophiuchus. It is about magnitude -2 in brightness and its disk about 35 arc sec across this month.

Saturn



Glenn Frank

Saturn is visible low in the east southeast just below Venus in constellation Sagittarius. It is magnitude +0.6 in brightness and its disk is 15 arc sec across.

Uranus

Uranus is visible in the early evening in constellation Aries. It is magnitude 5.8 in brightness and its disk is 3.4 arc sec across.

Neptune

Neptune is visible in the early evening in constellation Aquarius. It is magnitude 7.9 in brightness and its disk is 2.2 arc sec across.

Meteor Showers

There are no major meteor showers this month.

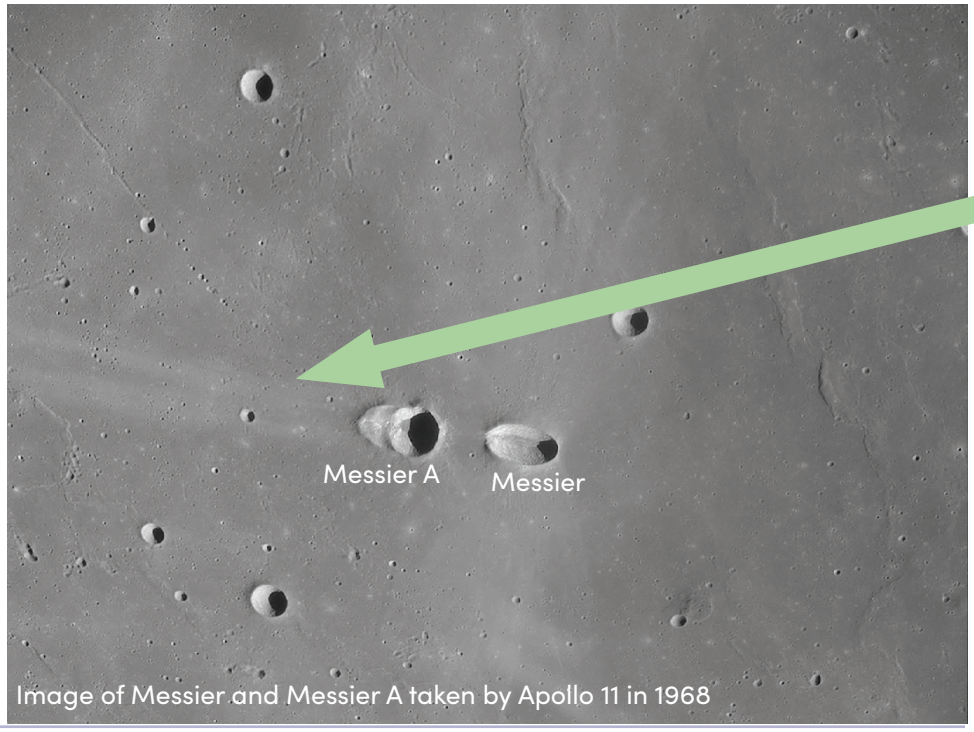
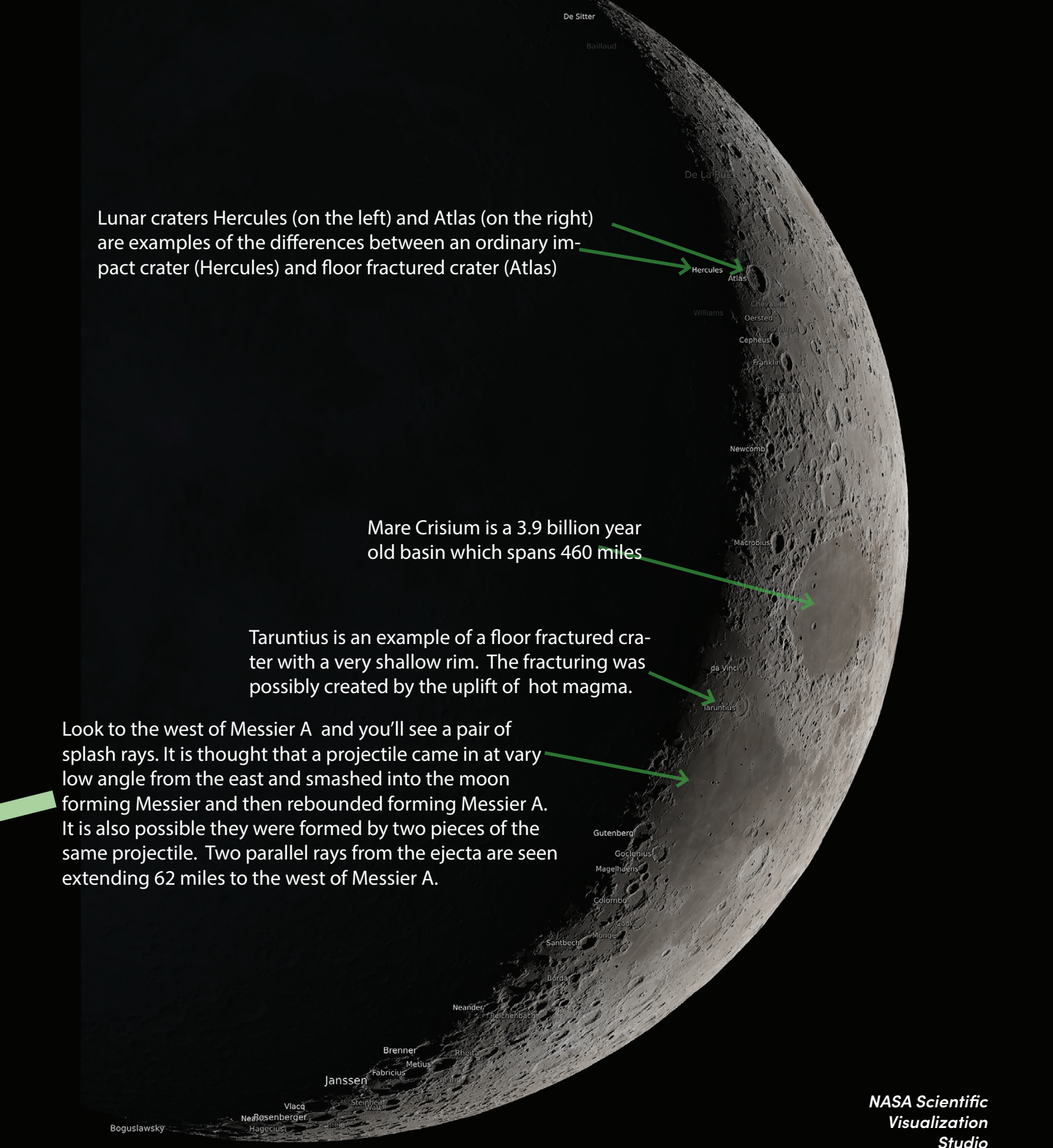


Image of Messier and Messier A taken by Apollo 11 in 1968

Lunar Highlights

February 9th at 7:00 pm (4 days after new)



Lunar craters Hercules (on the left) and Atlas (on the right) are examples of the differences between an ordinary impact crater (Hercules) and floor fractured crater (Atlas)

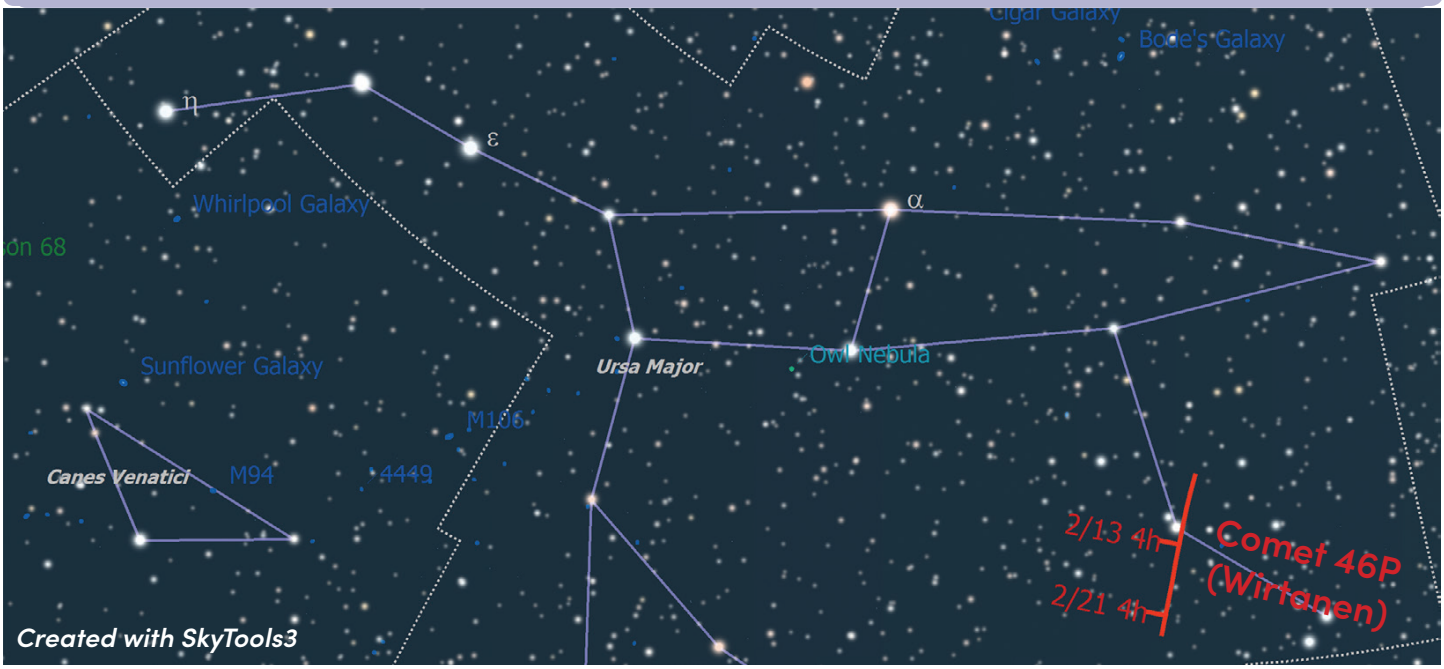
Mare Crisium is a 3.9 billion year old basin which spans 460 miles

Taruntius is an example of a floor fractured crater with a very shallow rim. The fracturing was possibly created by the uplift of hot magma.

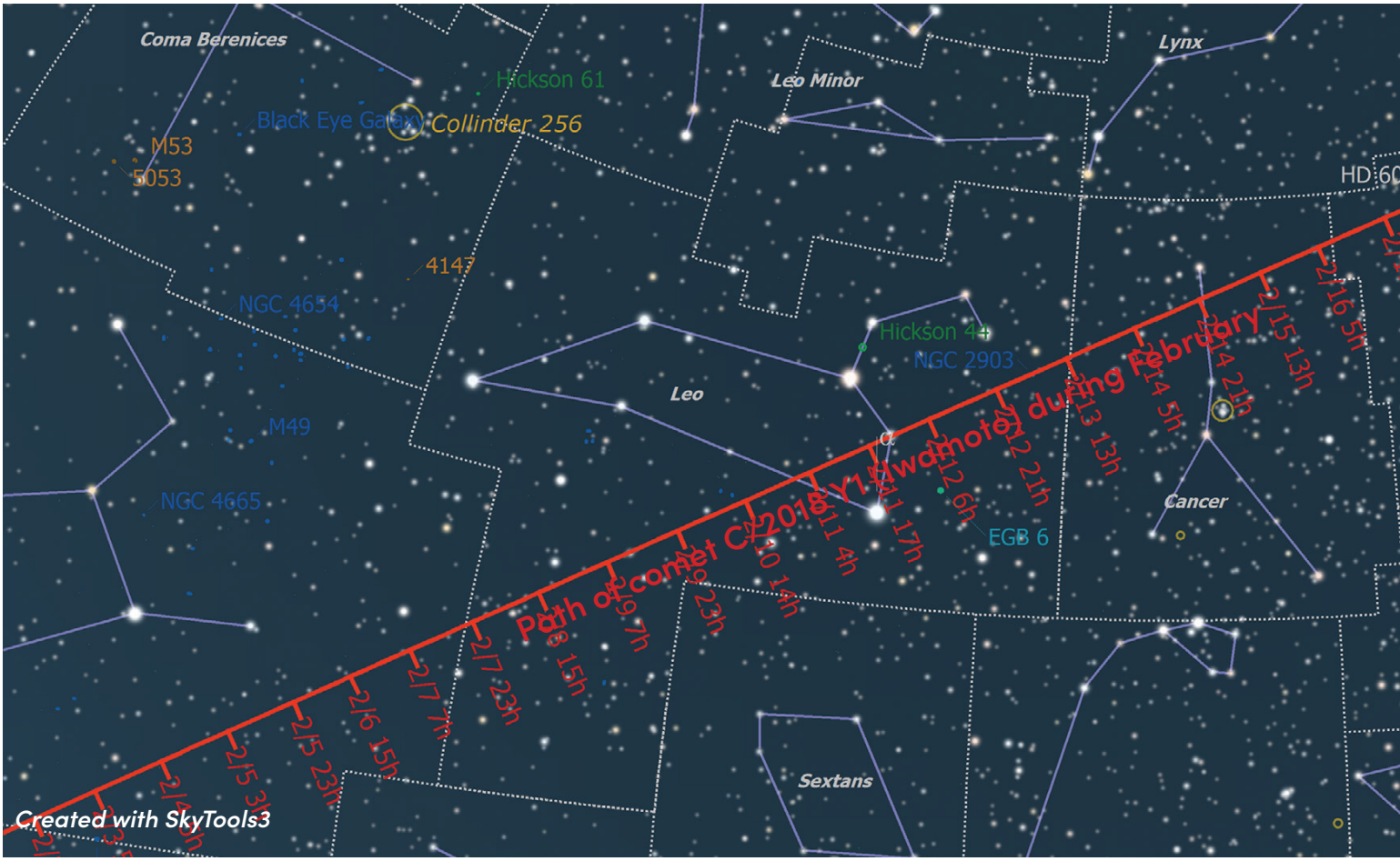
Look to the west of Messier A and you'll see a pair of splash rays. It is thought that a projectile came in at vary low angle from the east and smashed into the moon forming Messier and then rebounded forming Messier A. It is also possible they were formed by two pieces of the same projectile. Two parallel rays from the ejecta are seen extending 62 miles to the west of Messier A.

NASA Scientific Visualization Studio

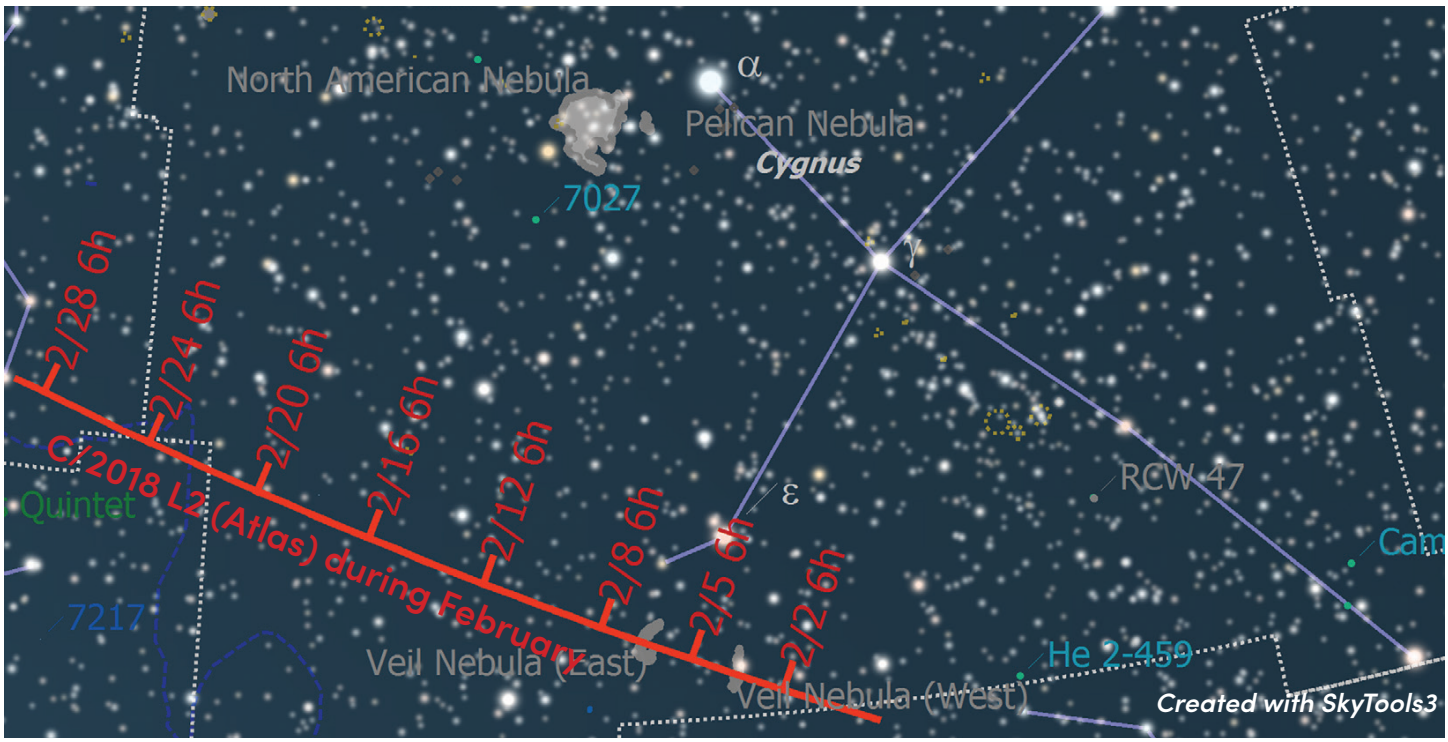
Comets



Comet 46P Wirtanen is currently magnitude 7.9 and expected to dim to 10.0 by the end of February. Its coma is 15 arc min across and is expected to decrease to 9 arc min. It is in constellation Ursa Major all month.



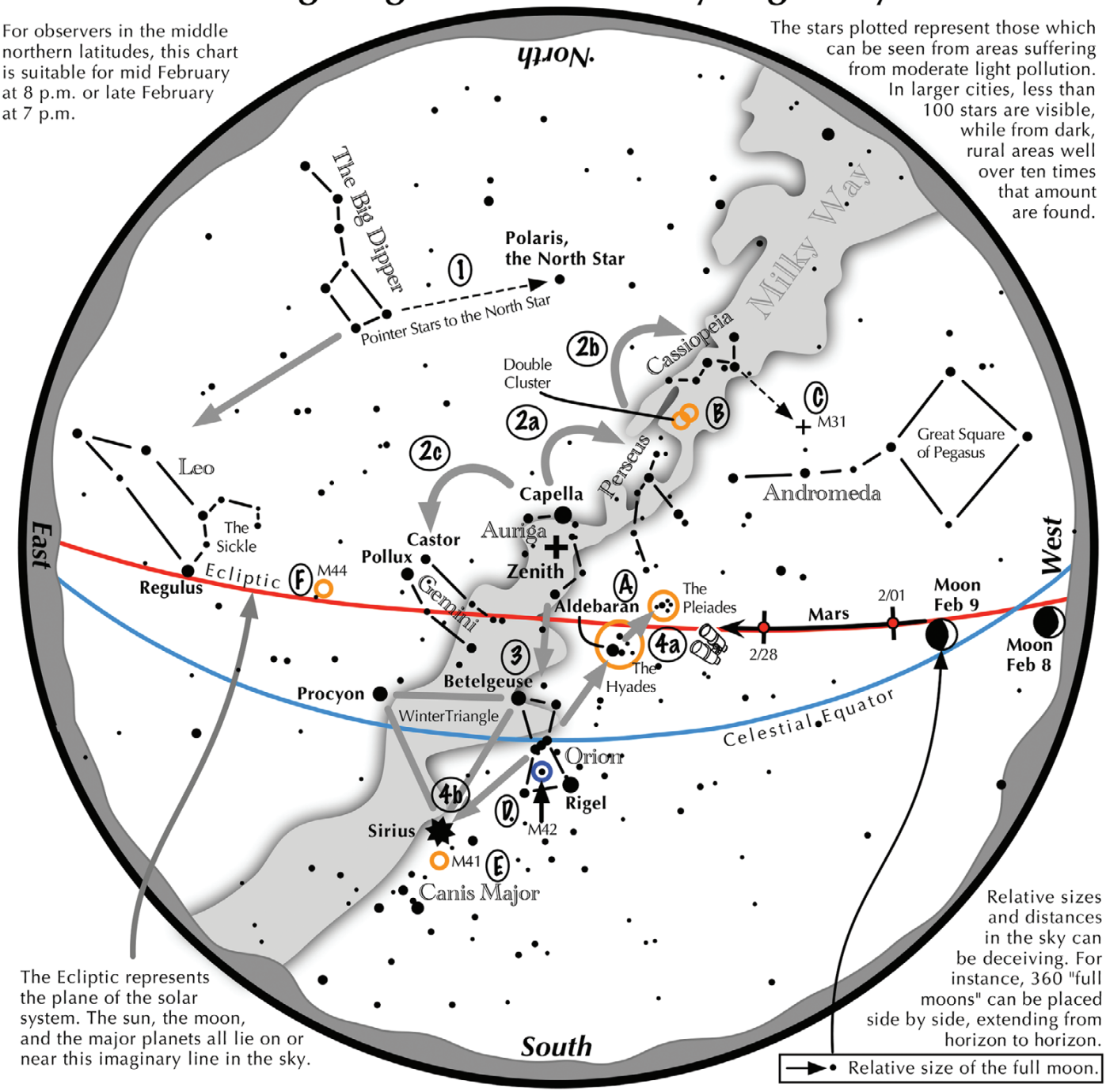
Comet 2018 Y1 (Iwamoto) is currently magnitude 8.3; it is expected to brighten to 7.3 around the 10th and then to dim to magnitude 9.3 by Feb 28th . It is in constellation Virgo on the 1st; it moves into Leo on the 7th; to Cancer on the 13th; to Gemini on the 16th; and then to Auriga. Its coma increases from 6 arc min to 8 arc min on the 10th and then decrease to 3 arc min at the end of the month.



Comet C/2018 L2 (Atlas) is in constellation Cynus on Feb 1. It moves to Pegasus on the 21st and then to Lacerta. It is magnitude 10.1 on the 1st and will dim to about magnitude 10.7 in brightness by month end.

Comet 46P Wirtanen by Gary Garzone on Jan 13

Navigating the mid February Night Sky



Navigating the February night sky: Simply start with what you know or with what you can easily find.

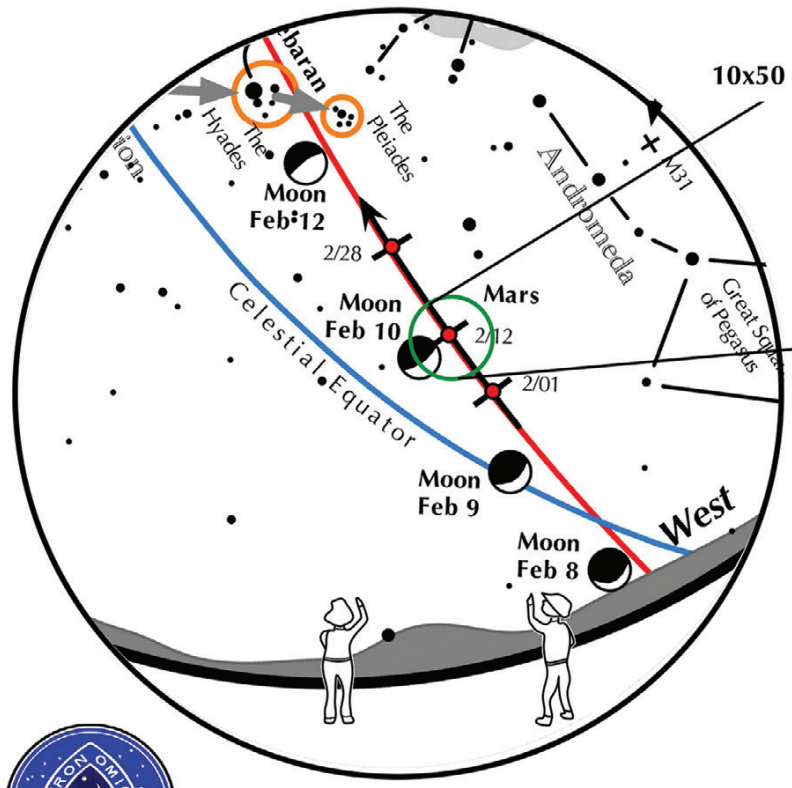
1. Above the northeast horizon rises the Big Dipper. Draw a line from its two end bowl stars upwards to the North Star.
2. Face south. Overhead twinkles the bright star Capella in Auriga. Jump northwestward along the Milky Way first to Perseus, then to the "W" of Cassiopeia. Next jump southeastward from Capella to the twin stars of Castor and Pollux in Gemini.
3. Directly south of Capella stands the constellation of Orion with its three Belt stars, its bright red star Betelgeuse, and its bright blue-white star Rigel.
4. Use Orion's three Belt stars to point northwest to the red star Aldebaran and the Hyades star cluster, then to the Pleiades star cluster. Travel southeast from the Belt stars to the brightest star in the night sky, Sirius, a member of the Winter Triangle.

Binocular Highlights

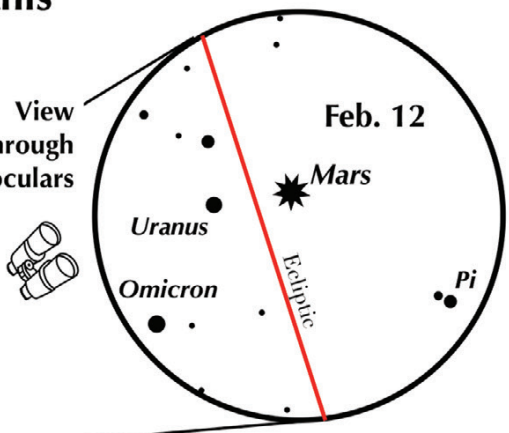
A: Examine the stars of two naked eye star clusters, the Pleiades and the Hyades.
B: Between the "W" of Cassiopeia and Perseus lies the Double Cluster.
C: The three westernmost stars of Cassiopeia's "W" point south to M31, the Andromeda Galaxy, a "fuzzy" oval.
D: M42 in Orion is a star forming nebula. **E:** Look south of Sirius for the star cluster M41. **F:** M44, a star cluster barely visible to the naked eye, lies southeast of Pollux.

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:



Southwest 90 minutes after sunset Feb. 12



The Scene: Mars visits Uranus

Look to the southwest 90 minutes after sunset.

- Mars will be the brightest object in the area, other than the passing moon.
- Aim binoculars at the Red Planet. On the lower left edge of the field of view, shines Omicron Piscium and at the lower right twinkles Pi Piscium.
- The next brightest object in the field sits just to Mars' left, Uranus.
- A small telescope at high magnification will show Mars' small, ruddy disk, and Uranus' even smaller dot.
- Uranus spans 12 times the diameter of Mars, but it lies 7–1/2 times farther away.

From Our Newsletter Archives

February 2009

At the Feb 9, 2009 meeting Vern Raben will talk about enhancing astronomical images using Adobe® Photoshop. He will cover the basics of removing gradients, neatralizing sky backgrounds, and setting white and black points will be covered.

LAS web master Steve Albers has received the R. R. Newton Award from the International Journal of Scientific History for unearthing a Galileo discovery.

February 1999

Leigh Pearson, president of LAS, spoke to the group about becoming more involved. It always seems to be the same people at star parties for the public and at private LAS events. He is willing to help members get started observing.

Dave Street reported to the group about ways to observe the upcoming solar eclipse in Romania.

LAS secretary-treasurer for LAS, Melinda Diehl reported the club bank balance was $126.76.

February 1989

LAS treasurer, Jenifer Getson, reported bank balance was $352.

Greg Dickinson reported a proposed ham radio astronomy network.

Bud Cohee suggested sending signed newsletters to members who missed club meetings.

Randy Cunningham talked about plans to build a club observatory near Colorado Springs.

LAS Meeting Notes for Jan 17 by Joe Hudson

Longmont Astronomical Society
Annual Business Meeting
Thursday January 17, 2019
1800 hours MST at Beau Jo's Pizza, Longmont, CO.

Agenda for meeting:
- Introduction of officers
- Announcements and 2018 Year in Review
- Election of Officers

President Vern Raben opens and moderates:
Welcome to all, introduction of the 2018 officers in attendance:
- Vern Raben – president
- Gary Garzone – vice president
- Marty Butley – treasurer
- Joe Hudson – secretary
- Brian Kimball – board member
- Jim Elkins – board member (not present)
- Tally O'Donnell – board member

People who contributed images during the past year were acknowledged.

LAS Announcements :
- Public star party and view the Lunar eclipse at Rabbit Mountain on Jan 20
- Feb 9 Sandstone Ranch star party
- LAS meeting on Feb 21 LAS - the speaker will be John Bally
- Special use permit for the Lunar Eclipse and for monthly star parties at Rabbit Mountain events has been approved by Boulder County.

Year in Review

Outreach
- 11 star parties conducted in 2018

Library Telescope Project
Two scope kits on hold pending board review -- another library might be selected. There is ongoing maintenance of scopes in the library program. Repair and maintenance performed by Bruce Lamereau - Thank you Bruce!

2019 Calendar / Yearbook Project
We were very pleased with the cost and printing quality from Shweiki Media. Next year we should start a little earlier to be ready for sale by the Nov. meeting. Selection of images should have been better organized; it was done in a couple days and not everyone had opportunity to submit images.

Business meeting

Annual Financial Report presented by Marty Butley
LAS ended 2018 with 86 paid memberships. Financial report submitted, accepted, and approved.

2019 Officer Nominations
Vern explains process and voting schedule. Nominations remain open until the vote occurs.

The following officers were nominated and elected:
- President: Bill Tschumy
- Vice President: Stephan Garretson
- Treasurer: Marty Butley
- Secretary: Joe Hudson

Board members:
- Vern Raben
- David Elmore
- Tally O'Donnel
- Brian Kimball
- Gary Garzone

Upon completion of the vote and with a new President in office, Vern received a standing ovation in recognition of his tireless efforts to strengthen LAS for our enjoyment and the benefit of the community beyond. With gratitude and affection Vern: job very well done.
Positions appointed by the President - Newsletter editor and Webmaster
- Vern volunteered, Bill graciously accepts.

Bill Tschumy's Remarks
He is very pleased and excited to take on the job... Bill was LAS president in 2013. His goals for Longmont Astronomical Society in 2019:
- A program to support those who are new to LAS or to amateur astronomy. Possibly have a series of 'Practical Astronomy' talks presented by LAS members experienced in the various disciplines
- Locate a semi-dark sky site for group observing. Look at purchase or leasing land. This would greatly expand membership.
- Find a new meeting place

Bill extends his thanks and personal excitement about the future of Longmont Astronomical Society. The meeting was adjourned.

Member Images

Lunar Eclipse by Chris Fauble

Banard 3 and environs by Stephen Garretson

IC 434 in H-Alpha by Chris Fauble

Lunar Eclipse by Clarke Yeager

Witch's Head Nebula by Tally O'Donnell

Hercules Globular Cluster (M13) by M. J. Post

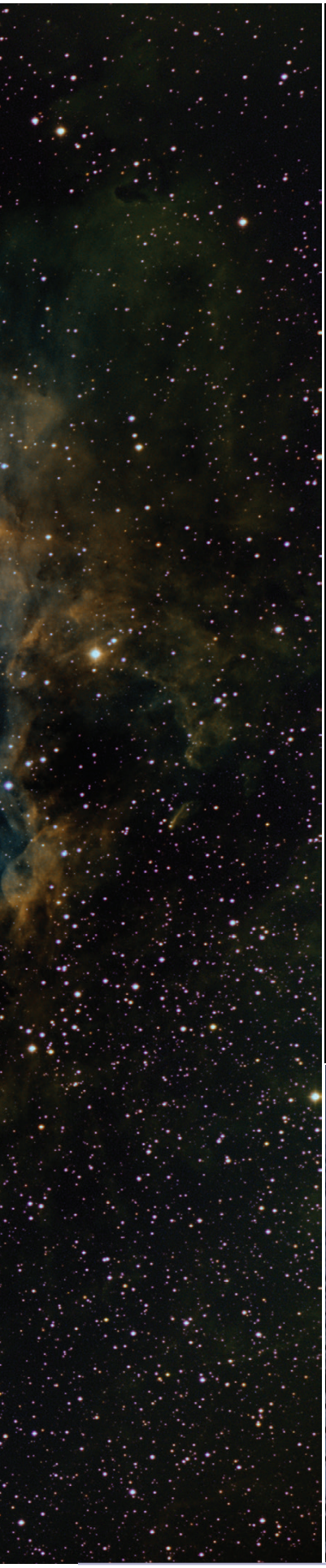
Orion Nebula (M42) by Clarke Yeager

Cone Nebula by Stephen Garretson

Moon by Eddie Hunnell

Running Man Nebula by Gary Garzone

Rosette Nebula by M. J. Post



Moon by Glenn Frank

Venus, Moon, and Jupiter conjuction Jan 31 by David Elmore

Triangulum Galaxy (M33) by M. J. Post

Cone Nebula by Marty Butley

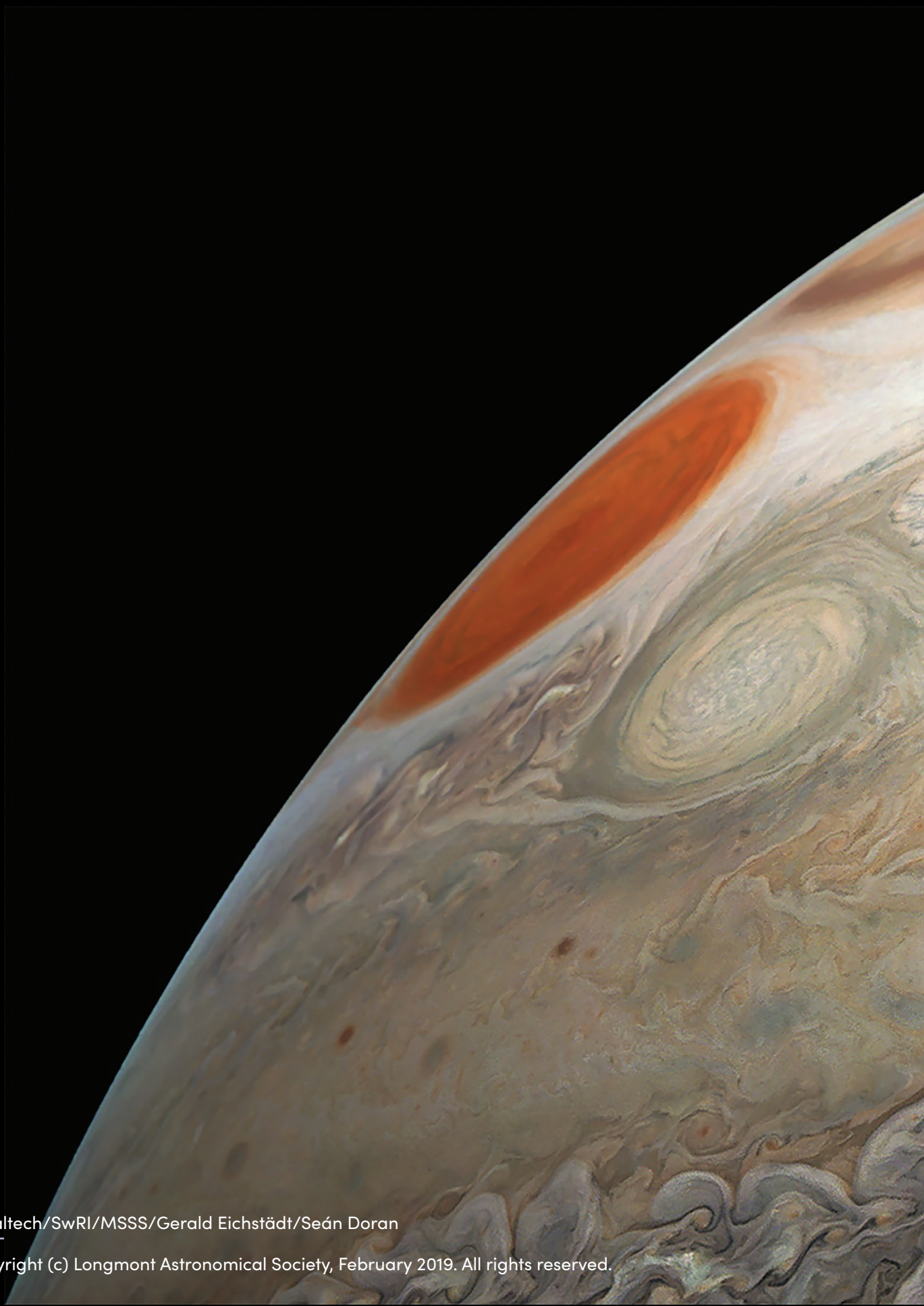
IC 2177 and Gum 1 Nebula by Stephen Garretson

California Nebula by David Elmore

Double cluster in Perseus by M. J. Post

Crab Nebula (M1) by Gary Garzone

Horse head Nebula by Gary Garzone



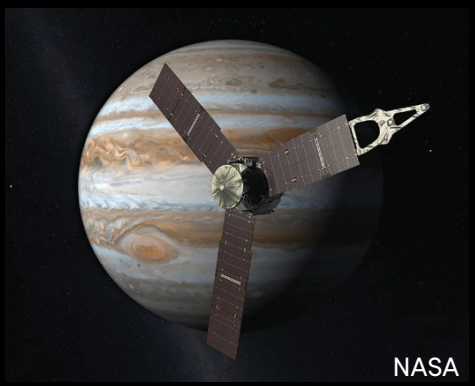
NASA/JPL-Caltech/SwRI/MSSS/Gerald Eichstädt/Seán Doran

NASA's Juno spacecraft captured this image of Jupiter's turbulent southern hemisphere during a close flyby of the gas giant planet on Dec. 21, 2018.

Toward the upper left is Jupiter's Great Red Spot and just below and to its right is another gigantic storm called "Oval BA". The "Oval BA" storm became the current size when three smaller spots merged about 20 years ago.

Three images captured between 8:32 and 8:42 am MST on Dec. 21st were used to produce the image. At that time he Juno spacecraft was between 23,800 and 34,500 miles above the planet's atmosphere.

The Juno spacecraft was built by Lockheed Martin and was launched from Cape Canaveral Air Force Station on August 5, 2011. After a 5 year journey it began orbiting Jupiter on July 4, 2016.

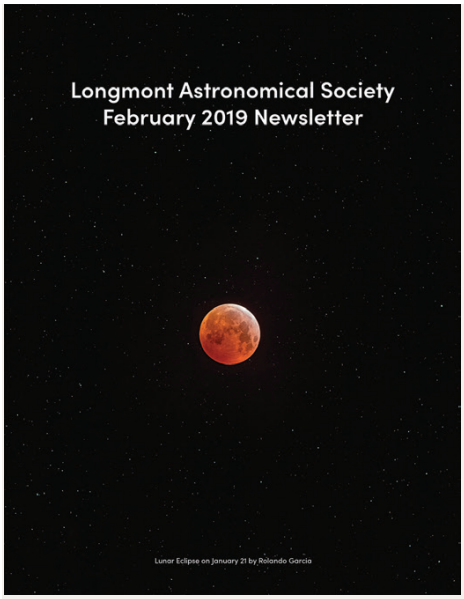


The above image of Ultima Thule was deconvolved and colorized by a physics and chemistry agrégé teacher Lycée St Paul, Vannes (France). He used used images NASA obtained when the New Horizons spacecraft flew past the 30-km long space rock on January 1. It is the highest resolution picture of Ultima Thule's surface received so far.

Kuiper belt object 2014 MU69, nicknamed Ultima Thule, is the most distant asteroid visited by a spacecraft. Utima Thuli looks very different than images of asteroids in the inner Solar System. It shows unusual surface texture, relatively few obvious craters, and nearly spherical lobes. Its shape may have formed from the coalescence of rubble from two objects -- Ultima and Thule . Further research will reveal whether or not Ultima Thule has an atmosphere. Researchers are also interested in how it got its red color. The goal is to learn more about the ancient solar system which in turn may provide knowledge about the formation of the Earth.

Items Available for Purchase at the LAS Store:
https://www.longmontastro.org/membership

The first ever LAS Calendar. Monthly astro-photos were contributed by LAS members. The calendar is localized to the Denver time zone. It shows LAS meetings and star parties as well as celestial events.
Price: $5.00 (pickup at meeting) or $8.00 (mailed)
See https://www.longmontastro.org/membership#2



The March edition of the LAS Newsletter will be printed on very high quality 100# paper. If enough people are interested we may publish a paper edition every quarter.

Price: $4 (pick up at meeting) or $7.00 (mailed).

See https://www.longmontastro.org/membership#3

Please join LAS this year! If you are already a member don't forget to renew. Cost for new members or renewing your membership is $21 for you and your family. See https://www.longmontastro.org/membership

Thus far LAS has placed 21 telescopes in local libraries. Donate to the LAS telescope program at https://www.longmontastro.org/membership#1

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Iris Nebula M. J. Post