Longmont Astronomical Society

December 2020

"Horse head" by M. J. Post

Volume 35, No 12, Dec. 2020
ISSN 2641-8886 (web)
ISSN 2641-8908 (print)

LAS Meeting December 17 from 7 to 9 pm

"Live Remote Viewing" with Dr. Brian Otum

Our speaker this month is Dr. Brian Otum who is a member of the Great Lakes Astronomy Clubs and the University of Michigan Low Brow Astronomy Club in Ann Arbor, MI. Brian will demonstrate to LAS how he does virtual star parties using his remote scope. The agenda for his talk is:

- a 2.5 minute video explaining how he installed his remote scope including drone footage of the site (Dark Sky New Mexico)
- 10 minutes on the technology needed to put on the show
- Display some live images so you can see what can be done
- Take requests on what we should image

He will take the questions at any time throughout the talk. If you have any specific questions/concerns before he starts he will try to cover them.

2021 LAS Officer Positions - Volunteers Needed!!!

The terms of all LAS officers is only one year so each position is up for election each year. Please consider volunteering some of your time to support LAS by being a club officer in 2021!!

- President – determine meeting agenda, arrange for speakers, and lead meetings; make decisions regarding the club with the assistance of other officers and board members;
- Vice President – assist president and direct meetings if president is absent
- Treasurer/ALCor – handle club finances, receive payments, deposit funds and report financial status at meetings
- Secretary – keep notes for meetings to be published in the newsletter; record any motions and votes at business meeting
- Board member-at-large (3 positions) – make various decisions regarding club policies and finances
- Webmaster - maintain club website (appointed by president)
- Newsletter editor - publish monthly newsletter of meeting events, and member images (appointed by 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.

Contents

LAS Officers and Board Members in 2020

- Bill Tschumy, President
- Stephen Garretson, Vice President
- Michelle Blom, Secretary
- Bruce Lamoreaux, Treasurer

Board Members:
Mike Hotka, Gary Garzone,
Brian Kimball, Vern Raben

Solar System Highlights for December 2020

Image Credit: Brian Kimball

Third Quarter: Dec. 7 at 5:38 pm

New Moon: Dec. 14 at 9:18 am

First Quarter: Dec. 21 at 4:42 pm

Full Moon: Dec. 29 at 8:29 pm

Mercury

Mercury is not visible this month.

Venus

Venus is in the constellation Libra until the 17th when it moves to constellation Scorpio; it moves to Ophiuchus on the 21st. It is magnitude -4 in brightness and 12 arc sec across on the 1st and -3.9 in brightness and 11 arc sc across on the 31st.

Mars

Mars is visible high in the evening sky in constellation Pisces. On the 1st it is magnitude -1.1 in brightness and 15 arc sec across. On the 31st it is -0.2 in brightness and 10 arc sec across.

Image Credit: Gary Garzone

Jupiter

Jupiter is visible low in the south western evening sky in constellation Sagitarrius until the 18th when it moves to Capricornus. It is around 34 arc sec across and -2.1 in brightness on the 1st amd -2.0 in brightness and 33 arc sec on the 31st.

Image Credit: Gary Garzone

Saturn

Saturn is in constellation Sagitarrius until the 15th whe it moves to Capricornus. It is 15 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.

Neptune

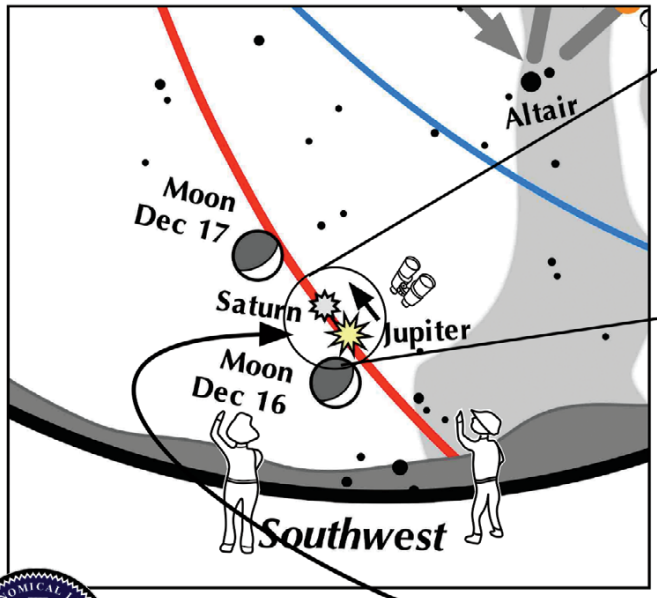
Neptune is visible in the evening sky in constellation Aquarius. It is magnitude 7.8 in brightness and the disk is 2.3 arc sec across.

Meteor Showers

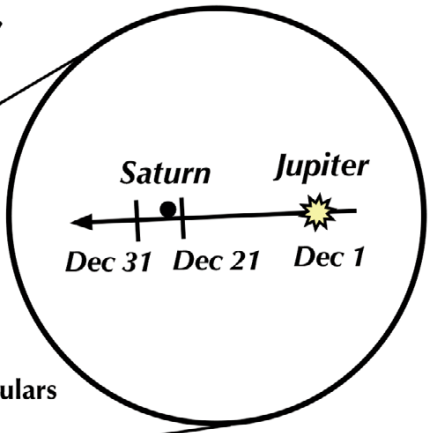
The Geminids meteor shower peaks on the night of December 13 - 14. The Geminids meteor shower is one of the best and most reliable meteor showers of the year with peak rate of 60 to 70 per hour. This year it occurs the night of the new moon so viewing the shower from a dark site might be cold but fun.

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

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



View through 10x50 binoculars



Jupiter approaches Saturn

Look to the southwest 60 minutes after sunset throughout December.

- Low in the southwest shine Jupiter and Saturn, the solar system's two largest planets.
- Over the next three weeks, Jupiter and Saturn approach each other 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, the two planets approach each other within a fraction of a finger.
- On December 21, the planets appear to merge into a single bright object. Binoculars will separate them. A telescope will show them in the same field!

Southwest 60 minutes after sunset

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

Date	Separation Degrees	Index Fingers
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 - Dec. 1010

The speaker at our Dec. meeting will be Robert Arn talking about "Imaging the Universe on a Budget". The LAS all sky camera is back in operation on the NOAA tower on Niwot Ridge. Thanks to Brad Hall for climbing the tower in windy cold conditions.

LAS will be teaching a "Beginning Astronomy" class for City of Longmont Recreation starting in January at the Memorial Building.

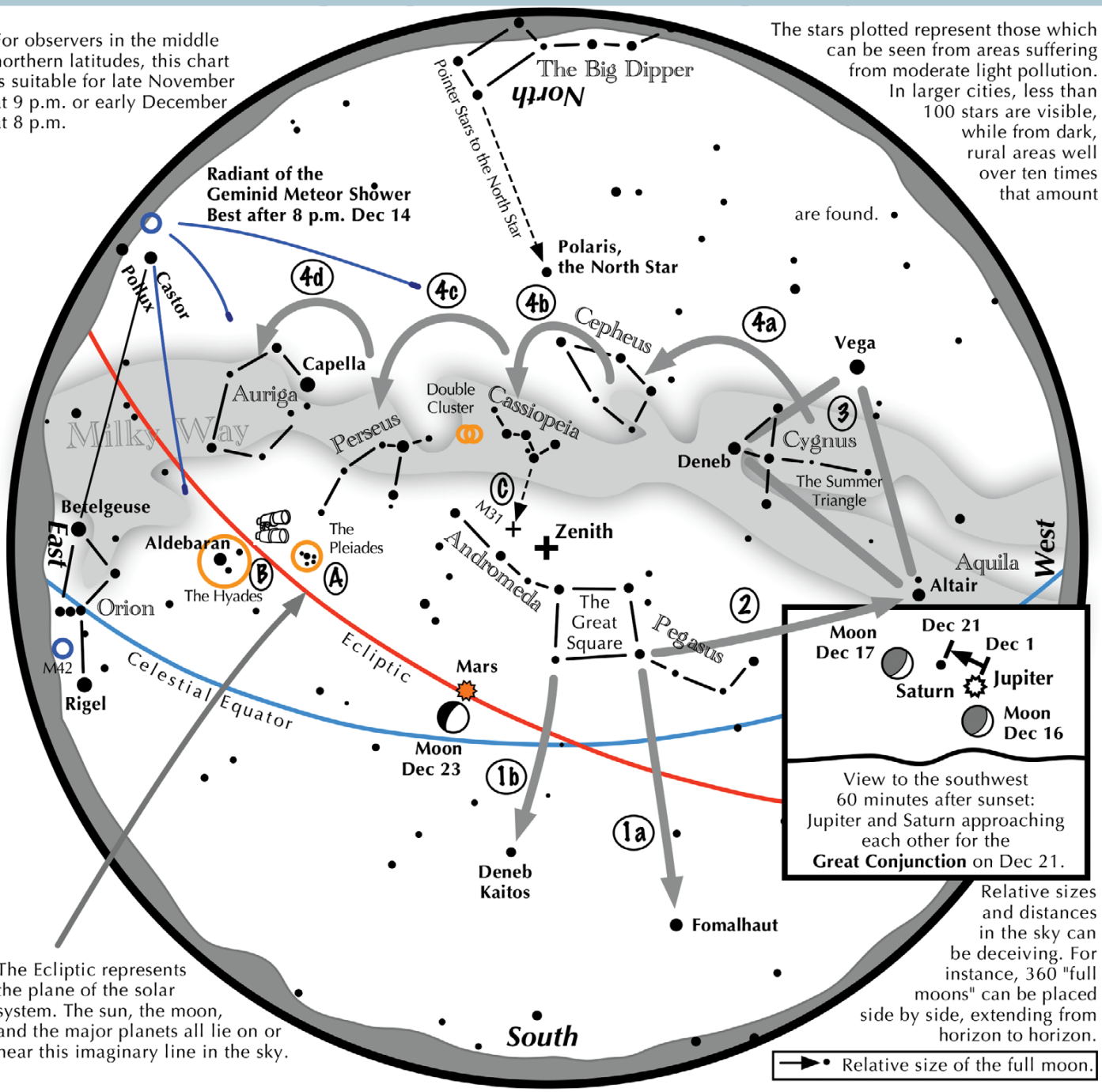
20 Years Ago - Dec. 2000

No newsletter was published for December 2000.

30 Years Ago - Dec. 1990

Jenifer Getson gave details on a planned trip to Hawaii for the upcoming eclipse in July 1991. The Mana Kea Astronomical Society will be hosting Astroleague members observing the eclipse. Brian Simpson gave a "Crater of the Month" talk on far side crater Tsikovsky. Jim Wilson presented constellation Eridanus; Randy Cunningham presented constellation Pisces. Bob Michaels talked about infrared telescope on Mauna Kea.

Navigating the mid December Night Sky by John Goss



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

1. Face south. Almost overhead is the "Great Square" with four stars about the same brightness as those of the Big Dipper. Extend an imaginary line southward following the Square's two westernmost stars. The line strikes Fomalhaut, the brightest star in the southwest. A line extending southward from the two easternmost stars, passes Deneb Kaitos, the second bright star in the south.
2. Draw another line, this time westward following the southern edge of the Square. 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, to Perseus, and finally to Auriga with its bright star Capella.

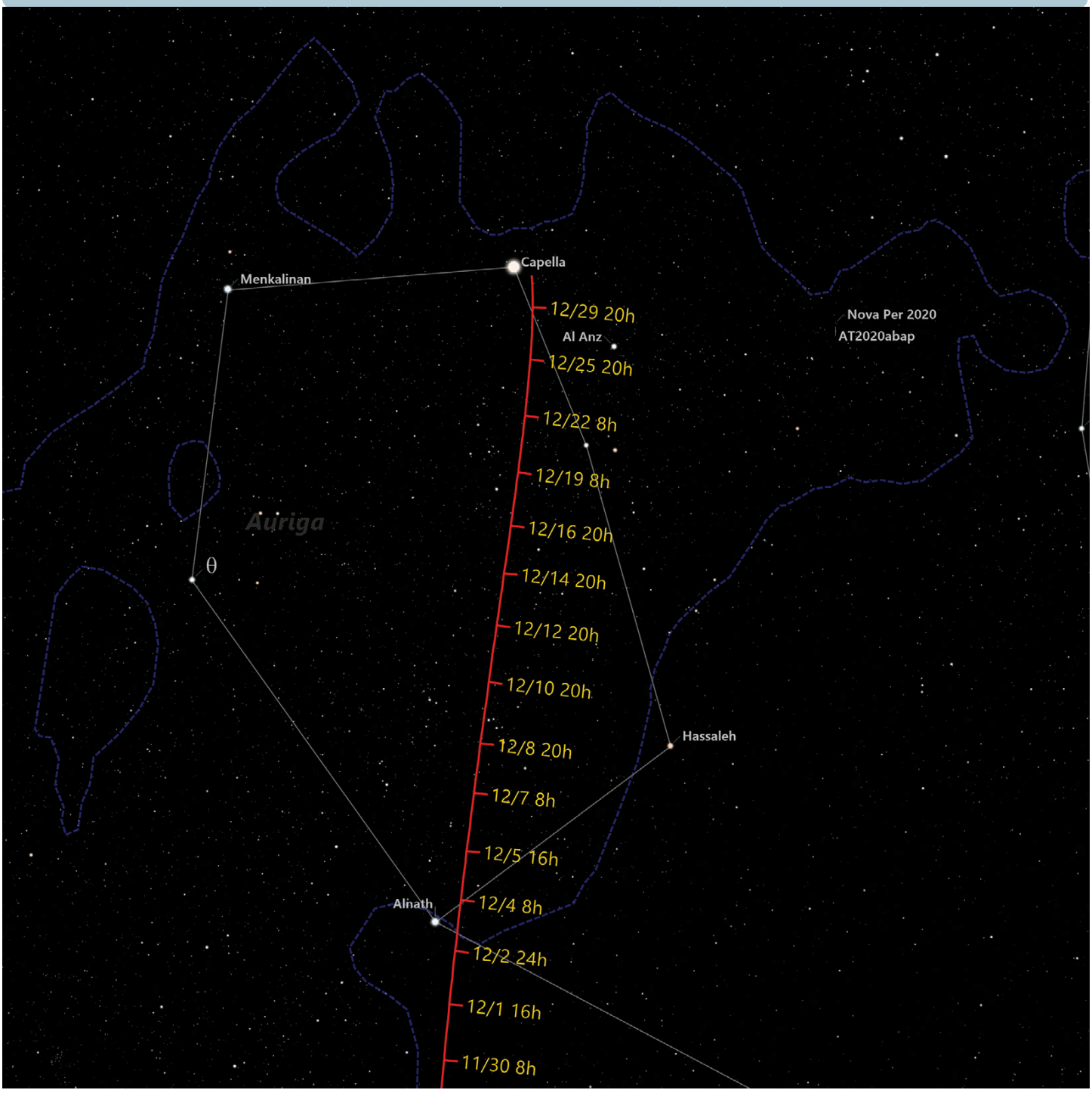
Binocular Highlights

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.

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

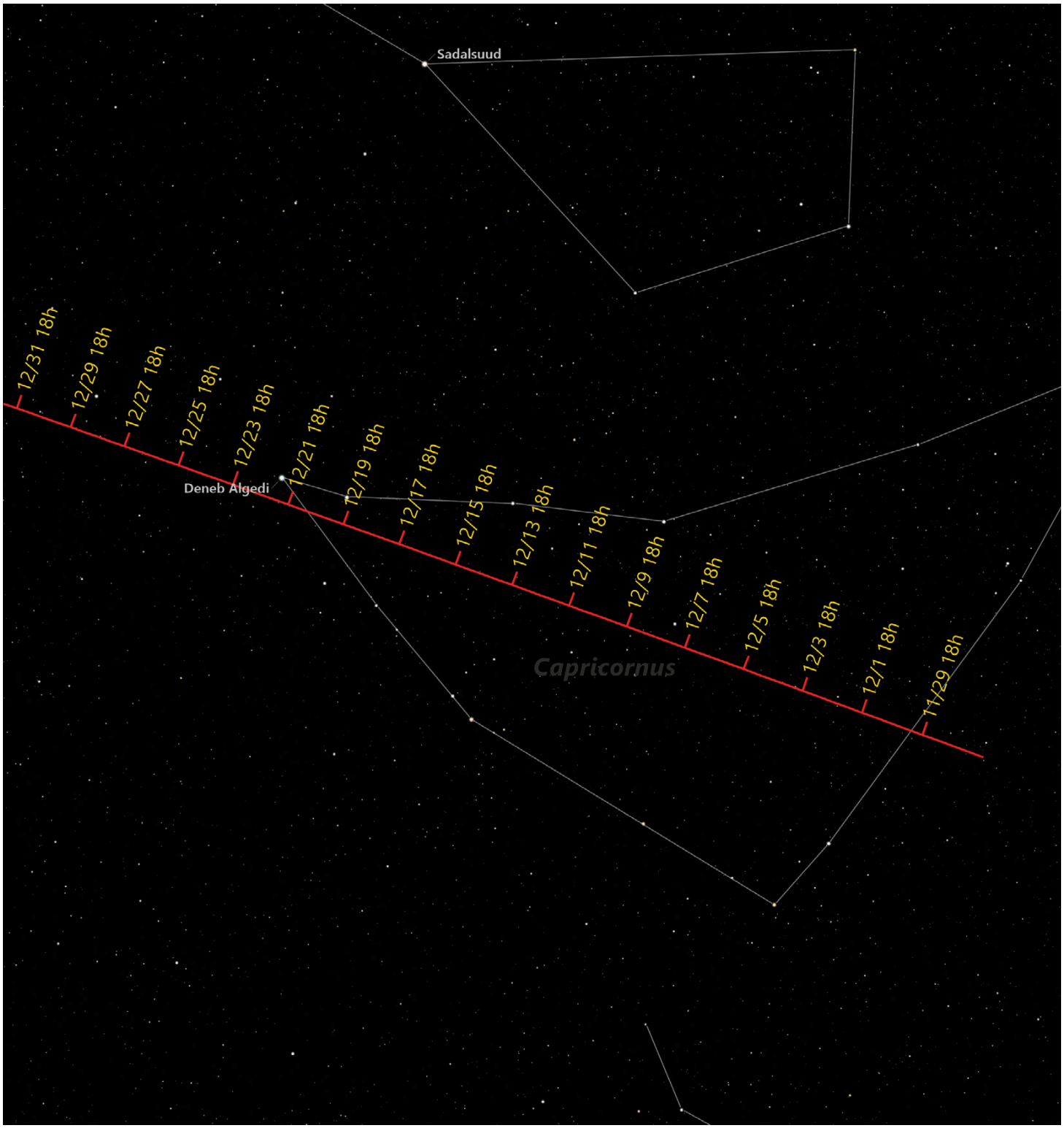
Comets in December

C/2020 M3 (ATLAS)



Date	Optimal time	RA	Dec	Brightness	Size (arc min)	Constellation
Dec. 1	9:20 pm	05h26m03.2s	+25°37'50"	8	5.8	Taurus
Dec. 8	12:08 am	05h22m21.4s	+33°31'03"	8.4	5.2	Auriga
Dec. 15	11:35 pm	05h18m59.9s	+38°38'09"	8.8	4.6	Auriga
Dec. 22	12:57 am	05h16m25.6s	+42°24'18"	9.3	4.1	Auriga
Dec. 29	06:17 pm	05h15m26.3s	+44°55'20"	9.7	3.6	Auriga

88P (Howell)



Date	Optimal time	RA	Dec	Brightness	Size (arc min)	Constellation
Dec. 1	06:03 pm	20h44m33.6s	-21°48'16"	9.6	6.5	Capricornus
Dec. 8	06:05 pm	20h57m52.3s	-20°51'29"	9.7	6.3	Capricornus
Dec. 15	06:07 pm	21h29m34.9s	-18°19'23"	10.2	6.0	Capricornus
Dec. 22	06:10 pm	21h50m30.3s	-16°26'46"	10.5	5.7	Capricornus
Dec. 29	06:14 pm	22h10m26.2s	-14°31'13"	10.8	5.5	Aquarius

Member Images from November 2020

"Lagoon" by Marty Butley

Cygnus wide field by David Elmore

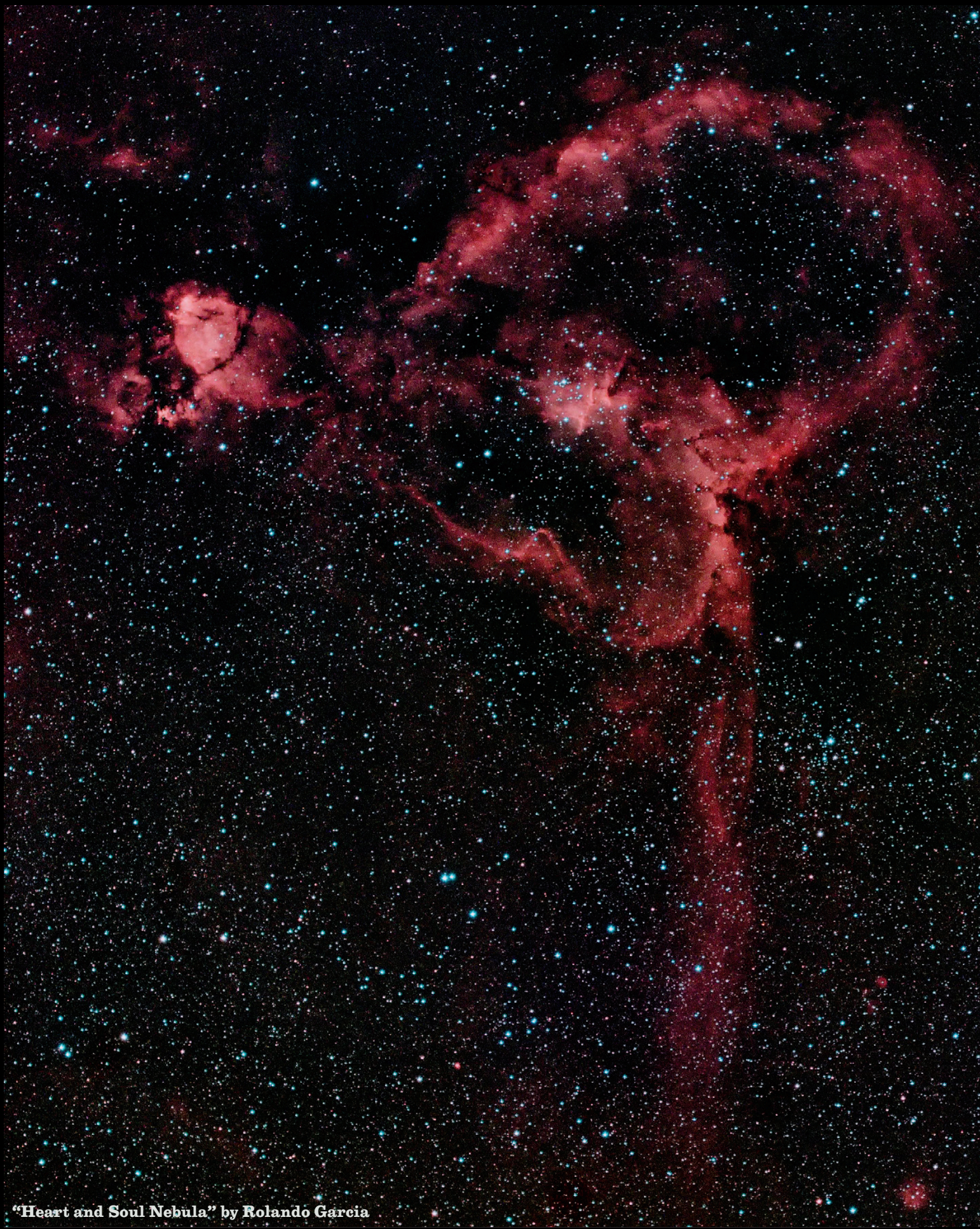
Orion wide field" by David Elmore

"NGC 253" by Gary Garzone

Comet C/2020 M3 (ATLAS) by Gary Garzone

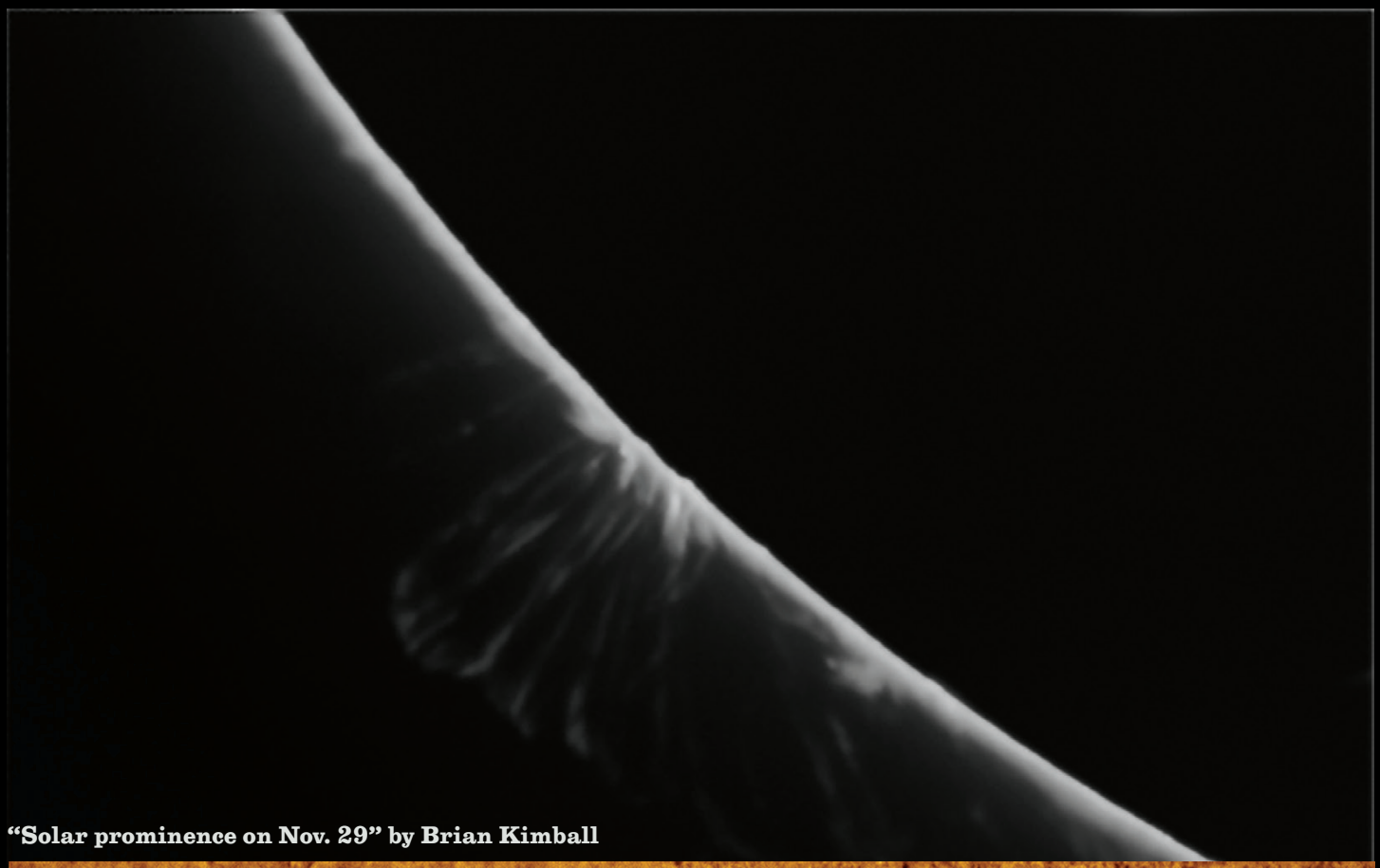
Orion Nebula by Eddie Hunnell

"NGC 891" by Eddie Hunnell

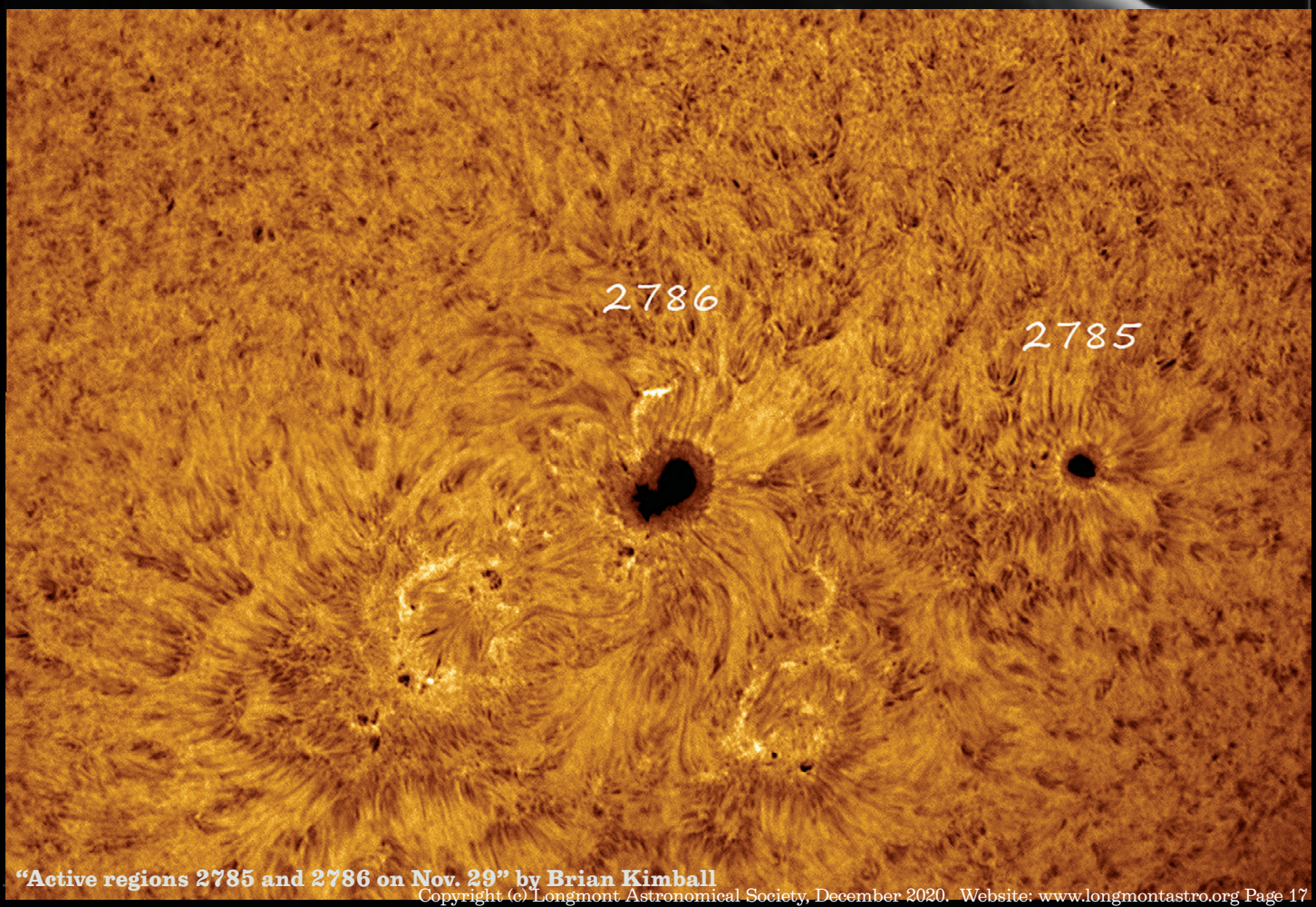


"Heart and Soul Nebula" by Rolando Garcia

Moon on Nov. 29 by Eddie Hunnell



“Solar prominence on Nov. 29” by Brian Kimball



“Active regions 2785 and 2786 on Nov. 29” by Brian Kimball

“M31” by Jim Pollock

“Horse head” by Jim Pollock

"Cocoon Nebula" by M. J. Post

Comet Erasmus (2020-S3) Nov. 22, 2020 12:20 UT (5:20 am MST) at Roggen, CO by Paul Robinson. 300mm f4.5 telephoto on Nikon D750. 9x30s at ISO 3200. Stacking, flattening, enh in CCDStack2. NGC 5068 mag 10.6 spiral galaxy in lower left corner. Alt 9 deg.

Sharpless 2-119 by Stephen Garretson

"The Wall" by Tally O'Donnell

Summary of Nov. 19, 2020 Meeting

Bill Tschumy, current LAS president, opened the meeting at 7 pm. He announced that he will not be running for president next year. Also Stephen will not be running for vice president and Michelle will not be secretary.

He asked for everyone to consider volunteering to be LAS officers in 2021.

Upcoming Events

There will be a close conjunction of Jupiter and Saturn on Dec. 21st. This will be the closest since 1623. The two planets will be only 6'19" apart at 5:30 pm. The planets will be visible in the same FOV in a telescope.

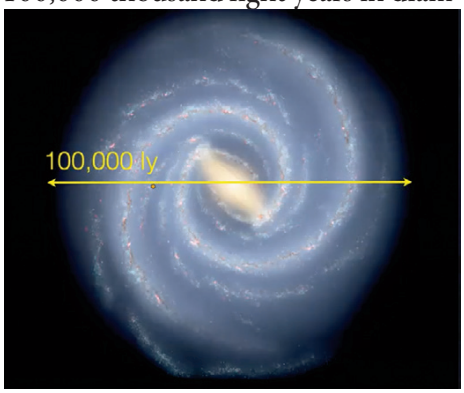
On Nov 30 there will be a penumbral lunar eclipse at 2 am. Penumbral eclipses are very subtle.

"Our Galaxy" presentation by Bill Tschumy

Motivation - Bill has been interested in the 3 dimensional location of objects in our galaxy for a long time. He wrote an application "Where is M13" 15 or 16 years ago. He found it strange that no one seemed to know the location of objects in our galaxy. About 18 years ago he read the book "Binocular astronomy" by Crosson and Tireon. It had a fascinating chapter about the structure of our galaxy. There were no illustrations in the book so it was difficult to visualize from just the descriptions. Bill made sketches to figure out where things were. Since he was a software programmer he decided to write an application, "Where's M13" to plot where objects were. He was involved with developing the "Sky Safari" app for 10 years. After he left Simulation Curriculum several years ago he took another look at "Where's M13". He decided to develop a new app which could plot object locations in 3 dimensions.

Basic facts about the Milky Way

The Milky Way galaxy is a barred spiral galaxy which is approximately 100,000 thousand light years in diameter. It has multiple spiral arms which are each about 6000 light years across. In the center is a galactic bulge which spans 7000 light years. Its disk thickness is 1000 to 2000 light years. The Milky Way contains about 200 billion stars (estimates vary, we don't really know). Its luminosity is 10 billion times that of our sun.



The galactic coordinate system.

The galactic coordinate system was established in 1958 by the International Astronomical Union. It is a spherical coordinate system which is sun based rather than being relative to the galaxy core. Longitude 0 degrees is toward the core of the galaxy. Latitude is an angle from the plane our sun.

Visualations using "Our Galaxy"

Bill gave a demonstration of his "Our Galaxy" application and talked about the galaxy features:

- Thin disk
- Thick disk
- Galactic bulge
- Stellar region
- Dark matter halo

Plato's cave allegory

Ancient Greece philospher Plato wrote allegory of cave in which prisoners were kept. The prisoners could only see a wall directly in front of them. Occasionly the 2 dimensional shadows of their captors was visible. One day one of the prisoners escaped and was totally amazed by a 3 dimensional world. We look at our star charts in only 2 dimension; our thinking is limited as we are in a 3 dimensional universe.

Conclusion

- "Our Galaxy" provides another way of visualizing our universe
- Only recently have positions of some objects been known in 3 dimensions
- Capability to compute and display 3 dimensions is a recent capability
- "Our Galaxy" is currently only available for Apple Ios and MacOS;
- Tools to do cross platform interface develpment and 3D graphics are poor and frustrating to use

Bill highly recomends the book "Alchemy of the heavens" by Ken Croswell. It is a very readable book about structure of our galaxy. For more info visit www.otherwise.com

Business Meeting

Treasurer report

Bruce Lamareaux, reports that LAS total assets remains at about $16K. There are 81 regular members and 2 student members.

Old Business - 2021 calendars

Vern reports they were due before the meeting but haven't been received (they actually arrived on Nov 26 - VR)

New Business

Discussion about what do for Dec 17th meeting and January banquet meeting (no consensus). Adjourned.

Longmont Astronomical Society
PO Box 806, Longmont, CO
https://www.longmontastro.org

LDN 1622 Area “boogey man” nebula by Stephen Garretson